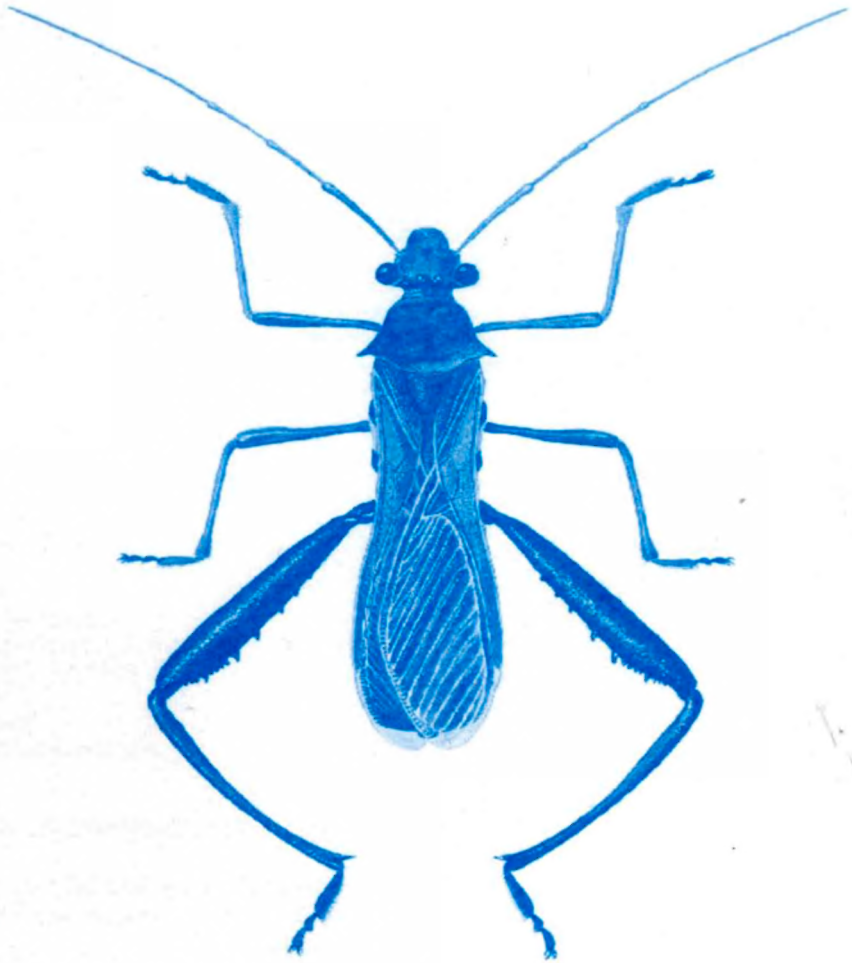
MYRMECIA

News Bulletin of the Australian Entomological Society Inc.
Volume 36, Part 4, October 2000
Australia Post Print Post Publication PP242296/00144. Price $5
ISSN 1323-6032



AUST. ENTOMOL. SOC. EXECUTIVE ADDRESS
Australian Entomological Society Executive
c/- Institute for Horticultural Development
Private Bag 15
South Eastern Mail Centre VIC 3176
AUSTRALIA

SOCIETY WEB SITE
http://www.agric.nsw.gov.au/Hort/ascu/myrmecia/myrmecia.htm

Patron
The Honorable Sir William Deane AC KBE, Governor General of the Commonwealth of Australia

OFFICE BEARERS

President
Assoc. Prof. A.D. Austin
University of Adelaide,
Waite Campus, Private Mail Bag 1,
Glen Osmond, South Australia 5064

Vice President
Dr P.M. Ridland
c/- Executive Address above
Ph (03) 9210 9222
Fax (03) 9800 3521
Peter.Ridland@nre.vic.gov.au

Secretary
Ms N.M. Endersby
c/- Executive Address above
Ph 03 9210 9222
Fax 03 9800 3521
Nancy.Endersby@nre.vic.gov.au

Treasurer
Mr I.D. Endersby
56 Looker Rd
Montmorency VIC 3094
Ph 03 9435 4781
Fax 03 9435 4781
endersby@mira.net

Public Officer
Dr Michael Lenz
CSIRO Entomology
GPO Box 1700 Canberra ACT 2601
Ph (02) 6246 4143
Fax (02) 6246 4000
mikelz@ento.csiro.au

THE COVER
The cover depicts a species of *Riptortus* in the family Alydidae.
It was one of the prize winning entries in the competition at the AES Annual meeting in Canberra, September 1999.

Promotions Officer
Dr Glynn Maynard
AQIS
PO Box 1006
Tullamarine VIC 3043
Ph (03) 9338 6371
glynn.maynard@aqis.gov.au

Chief Editor
Dr Peter Allsopp
Bureau of Sugar Experiment Stations
Private Bag 4, Bundaberg, DC 4670
Ph 07 4132 5200
Fax 07 4132 5253
pallsopp@bses.org.au

Technical Editors
Dr A.L. Bishop
Horticultural Research Station
Box 581 Gosford NSW 2250
Ph (02) 43481928
Fax (02) 43481910

Dr K.L. Walker
Museum of Victoria
71 Victoria Cres
ABBOTSFORD Vic 3067
Ph (03) 9284 0201
Fax (03) 9416 0475
kwalker@mov.vic.gov.au

Dr A.R. (Tony) Clarke
Australian School of Env. Studies
Griffith Uni. Nathan Campus,
Nathan, 4111, Qld.
Ph & fax: (07) 3875 3846
T.Clarke@mailbox.gu.edu.au

Dr A. Andersen
CSIRO Wildlife & Ecology
Tropical Ecosystems Research Centre
PMB 44, Winnellie NT 0821
Ph (089) 22 1727
Fax (089) 47 0052
Alan.Andersen@terc.csiro.au

SOCIETY SUSTAINING ASSOCIATES

Australian Entomological Supplies
Integrated Pest Management (Bugs for Bugs)
Monsanto
Novartis Crop Protection
Rhône-Poulenc Rural Australia

MYRMECIA

MYRMECIA WEB ADDRESS:

http://www.agric.nsw.gov.au/Hort/ascu/myrmecia/myrmecia.htm

CONTENTS

Editorial	1
International Congress, Brisbane 2004	2
XXI ICE Brazil	3
AES 32nd AGM & Conference, Sydney	3
Retiring Executive Report	4
AES Executive Meeting	5
Ode to Sternorrhyncha	5
Entomologists in Australia 2000	5
ABRS	8
Formidable beetle pests in PNG	9
Official State Insects	10
WWW-Spinners	10
Regional News	
Australian Capital Territory	11
New South Wales	13
Northern Territory	15
Queensland – North	18
Queensland – South	19
South Australia	21
Victoria	22
Western Australia	24
Papua New Guinea	26
Employment in Entomology	27
Postgraduate Entomology Projects	27
Notices	30

NOTICE

Statements made in *Myrmecia* do not necessarily represent the views of the Australian Entomological Society. Items printed herein should not be reproduced without permission of the author of the material.

COPY DEADLINE FOR NEXT ISSUE

Material for publication in the Novembert 2000 issue of *Myrmecia* will need to be in the hands of the Editor by **Friday 16 January 2001**. All material should arrive by e-mail to laurence@ento.csiro.au. If this is not possible, fax to 02 6246 4264.

EDITORIAL

So "the big one" is again coming to Australia! Those of you who can remember 1972 may be able to recall the effort needed that year to host the International Congress of Entomology. Since then these congresses have grown in size and scope. Not that Brisbane will be as big as the reputed 9000 at Beijing. But now that US citizens have learned where we are, courtesy of the Olympics, we can expect them to join the Japanese and other S.E.Asians in enjoying this countries hospitality - and entomology. In making the formal announcement that the Society has been priveleged in having its invitation to ICE accepted, Meron Zalucki sounds a spirited call to arms in this issue. Internationally, this will be a fine opportunity to demonstrate the wide range, and the depth, of entomological science in Australia. Perhaps even more important, it will be a magnificent opportunity to press home to our politicians the importance of science funding. But it will certainly require effort. And in that connection I can only express regrets to our readers that, although Australian science paid for so many entomologists to go to Brazil, it has not proved possible to find enyone willing to write up some flavour of that entomological feast for those Myrmecia readers who had to remain at home.

Not that Myrmecia editor spent much of the past three months at home. The northern summer, and the intellectual excitement of the British Museum, proved far more attractive than Canberra's winter. Two weeks in the restaurants of southern Italy, planning the programme for next July's International Thrips and Tospovirus Symposium at Reggio Calabria proved particularly arduous. And then two weeks washing away Chile's thrips problems with magnificent reds. It was a hard winter.

I have been warned by the Executive that the spectre of publishing only in electronic form is again on Myrmecia's menu, having been tabled by our publisher Blackwell Scientific. So, if there is any young person out there with an interest in running this News Bulletin in an electronic form, please step forward (or at least send an e-mail). My own view of screen text remains, that it is great for consulting and searching for facts. But there is an absence of information from my own digital proprioceptors, those that are involved in page turning, and this absence of one of the major feed-back loops in the traditional learning process

exagerates the amnaesia of old age.
Tony Clarke wrote to me recently that it appears to have escaped our notice that our Society was founded at Hobart 35 years ago this month. As foundation President Ian Mackerras wrote in the first newsletter that "Scholarship, more than wealth or technical inventiveness, is an attribute that distinguishes civilized from uncivilized communities. It is an intangible, but very precious asset. Moreover, the first duty of a scientist in any field is to pay the debt he owes to those who went before, by adding to knowledge and understanding - that is, to true scholarship - within his discipline." Perhaps we should recall Ian's views, politically incorrect though they may be 35 years down the track.
Probably equally politically incorrect is the report that Australia lived up to its reputation for an addiction to barbecues when, on 1st October, boats under Sydney Harbour Bridge were showered with incinerated birds, insects and insectivorous bats as the fireworks exploded upwards. And how many more of you noted that the moth on Yvonne Kenny's dress during her delivery of the Olympics Hymn was a hawk moth not a bogong moth as trumpeted by the media?

LAM

INTERNATIONAL CONGRESS of ENTOMOLOGY, Brisbane 2004

As you all may have heard, our Society's bid to hold the 2004 International Congress of Entomology in Brisbane was successful. This success was largely due to the efforts of the Interim Bid Committee which had a representative from each State and Territory assisting the previous President (Jim Cullen) and Vice-President (Myron Zalucki). Our thanks to Murray Fletcher (NSW), Tim New (Victoria), Andy Austin (SA), Alan Anderson (NT), Geoff Alan (Tas), David Yeates (Qld) and Jonathon Majer (WA). Thanks also to all those who offered views and suggestions via our email discussion on the bid.
Jane Wright, Jim Cullen and Myron Zalucki presented the Australian bid to the ICE Committee in Iguassu, Brazil, with what must have been the right mix of professionalism, candour and enthusiasm (as well as a bit of impromptu humour). The professionalism of the bid was in no small part due to the help provided by Alison Gardner and Kristen Goldup from Brisbane Tourism, and Clair Wilkinson from the Brisbane Convention and Exhibition Centre.
The Society owes a debt of thanks to Jim Cullen who put himself and CSIRO Entomology behind the bid, generating a great webpage (see www.ento.csiro.au/ice2004/), an excellent brochure (that was in every delegates satchel in Brazil), and for being the opening bat for the presentation to the ICE Committee.
Now the hard work starts! We need to capitalise on the enthusiasm among members, and to ensure that the momentum generated in Iguassu continues. There will need to be a willingness and commitment to see this through, but with the depth and interest that exists in the Society, there is no reason why we cannot organise an International Congress as memorable as the Sydney Olympics! We have an opportunity not only to show-case Entomology as a Science, and its relevance to Society in the future, but also a great opportunity to set new directions and generate powerful networks with colleagues in our region and beyond, and re-invigorate Entomology and the AES nationally.
So what needs to happen to keep the ball rolling? The President and Vice-President (Andy Austin and Peter Ridland) and their predecessors (Jim Cullen and Myron Zalucki) have formed an interim committee to appoint a Professional Conference Organiser (PCO). This is a crucial first step and will be facilitated by a tender process during October, with a view to selecting a PCO before the end of the year.
There are a number of key committees that will need to be formed in the near future, and a transparent process and policies put in place for the scientific sessions. Here are some preliminary thoughts on a Committee structure and functions.
There will need to be a Congress Executive Committee to oversee policy and ensure the organisation of the Congress stays on-track. This committee should include the core AES Executive, a Congress Chairperson or President, a representative of the Council for International Congresses of Entomology, and the PCO. There will need to be at least a Scientific Organising Committee, a Finance Committee and a Social/Education/Tours Committee, and the chairs of these will need to report to the Executive on a regular basis. These Committees will need to comprise a mixture of local (Brisbane) and national members, as well as International members for the Scientific Organising Committee. The latter will be the largest and most important. The key here will be the selection of Session Leaders and Symposium Organisers. Critical will be the avoidance of the same symposium in 2-5 sessions, as has happened in previous Congresses. We should consider publishing symposia in special issues of Journals or edited and refereed books. Posters need to be organised in line with Symposia and the venue, the Brisbane Visitors and Convention Centre will allow this to happen. We should avoid the 'telephone directory' style book of abstracts of past Congresses,

and rather have a slim printed program with abstracts on CD as a permanent record.
The Finance Committee will be vital to the financial success of the Congress. We will need people on this, and the other Committees, who are well networked nationally and internationally. Finally one should not underestimate the importance of a great social program. Australia and Brisbane have a great deal to offer visiting entomologists during the Congress and as pre- and post-conference tours.
The other crucial aspect is to include our colleagues in Asia and the Pacific Rim – we have a number of pressing entomological needs and issues that bind us. In particular the systematics of insects of so called quarantine importance and the movement of biological control agents across the Pacific.
This Congress will be a great event for the Society and Entomology in Australia, and with enough people willing to help it will certainly be an interesting and enjoyable one. In the near future we will be in contact with you asking for volunteers for the various Committees. If you have any comments and suggestions please contact any of the following people:
Andy Austin – andrew.austin@adelaide.edu.au
Peter Ridland - Peter.Ridland@nre.vic.gov.au
Jim Cullen - jim.cullen@ento.csiro.au
Myron Zalucki - m.zalucki@mailbox.uq.edu.au
Looking forward to a great Congress in 2004!

Meron ZALUCKI

XXI International Congress of Entomology

Unfortunately only two members chose to give ***Myrmecia*** their opinions on this, the biggest meeting of entomologists ever held in the southern hemisphere. Peter Bailey is so right! And his comments apply to so many other meetings. I sometimes wonder why those who work on insects so often fail to convey their undoubted enthusiasm to an audience about their subject. LAM

My overriding impression of the XXI International Congress of Entomology recently held at Foz do Iguassu, Brazil was one of absolute chaos! The conference was very large, attracting thousands of delegates from around the world. It was held in four different locations across the city. Movement between the venues was by a rather erratic bus link. Communication between the session and conference organisers must have been somewhat sporadic in some cases, reflected by the number of people that thought that they were giving oral presentations rather than posters, generally resulting in these unfortunates being unable to present anything at all. I am confident that Australia's effort in hosting this event in 2004 will be positively smooth in comparison. On a more positive note, there were some interesting presentations, both oral and poster. Attending this conference proved valuable in both promoting my research internationally and meeting other workers. Iguassu Falls, a collection of 275 waterfalls, some up to three kilometres wide, was a spectacular sight. The flora and fauna was brilliant, particularly the amazing butterflies, and birds such as toucans and macaws.

Emma COTTAGE

English was the official language at the Congress in Brazil, even though English was not the first language of the majority of those attending. Nevertheless, the poster and oral presentations in English by non-English speakers seemed to be carefully prepared and well delivered. A pity then, that presentations by some native English speakers made no concessions to a multilingual audience, or indeed to any audience at all. Rapid speed of oral presentations lost many in the audience and mumbled utterances lost the remainder. All this could have been saved by clear and simple graphics. Alas, even here, the audience was not spared the horrors of Powerpoint images cluttered with too many words and ghoulish colours. Hopefully the organisers of the Brisbane conference can coax their invited speakers to be considerate of those in the audience who make the effort to use English as the language of science.

Peter BAILEY

Australian Entomological Society 32nd AGM and Scientific Conference

23-28 September 2001, Sydney.
Next year's annual meeting of the Society will be held at the Sydney beach-side suburb of Manly at the Manly Pacific Hotel from Sunday 23rd September to Friday 28th September. Manly is one of Sydney's tourist spots, with beach and harbour views, numerous restaurants and a range of accommodation from budget to 5 star. It is only 15 minutes ferry ride from Sydney CBD and the Rocks.
The Conference theme is "Insects and the Environment". While this will not be a joint conference with the NZ Society, we are encouraging participation by our NZ colleagues particularly through joint symposia.
Some suggested symposium topics are:
Education, training and extension; Taxonomy and general biology; Biodiversity and conservation; Ecology and Behaviour; Biological control; Pest

management and IPM; Insects in the urban environment; Social insects; Insects and human health; GMOs and insects; Quarantine, trade and exotic incursions

The organising committee is also seeking expressions of interest from potential conference sponsors.

The social activities will include the regular welcome drinks, fun run and Conference dinner. In addition, the committee is organising optional trips on the Wednesday for delegates and accompanying persons to the Blue Mountains (full day), or Olympic Park (half day).

Potential symposium convenors are asked to contact: Alison Campbell, Hawkesbury Global (a.campbell@uws.edu.au)

All other enquiries can be directed to: Robert Spooner-Hart (r.spooner-hart@uws.edu.au)

Retiring Executive Report

On behalf of the retiring executive I would like to thank the Darwin Organising Committee for putting on such excellent scientific meetings, and for the opportunity to hold the AGM in such magic surroundings. It has only taken 31 years for the Entomological Society to meet in Darwin. I am sure it will not be 31 years before we hold the next meeting there.

The core executive formally met 6 times since the last AGM. As has become customary these days a great deal of business was conducted via e-mail. Apart from welcoming new members and terminating those that have not maintained subscriptions our year was dominated, not surprisingly, by discussions surrounding the GST. These matters were covered in the Treasurers report.

Others matters that were discussed included the awarding of prizes. We are most thankful to Peter Allsopp for making recommendations on the Phil Carne Prize for the best student paper. This year we also had "nominations" for the MacKerras Medal. We thank the committee made up of the current President, Jim Cullen, and two past presidents, Rhondda Jones and Roger Kitching, for reviewing these. We are pleased that the medal will be awarded this year. We leave it to the next executive to work out a better process for garnering nominations. Entomologists are extremely reticent when it comes to sticking up their hand for potential accolades.

Another matter that kept the Vice-President very busy this year was developing the bid documents for the International Congress of Entomology to be held in Brisbane in 2004. The help of ad-hoc bid committee, Brisbane Tourism, and Jim Cullen has been instrumental in bringing this bid together. Many thanks also to those members that responded via e-mail with very useful suggestions on sessions, symposia etc and for volunteering at this early stage to be part of the organising committees should we be successful.

As this is the last report from the current executive I would like to reflect on what we have done over the last four years and to proffer advice on what needs to be done in the future, if the Society is to grow and develop. Perhaps our most obvious achievement was the change to Blackwells as the publisher of our Journal. I believe the improvements are obvious. The next step is to raise the impact factor of the Journal and this can only be achieved by members actively submitting their best scientific manuscripts to their Journal! The change to procedures on selecting the student undertaking and publishing the best entomological research has ensured we make the award Phil Carne Prize each year. It also encourages them to publish in our Journal. We established the Societies presence on the Web. This site has proved useful in raising our profile. It is essential that the site be developed and maintained.

During the life of the current executive we have seen our declining membership stabilise. Similarly our declining finances have not only stabilised but they have in fact increased. This has been due, in part, to some highly successful meetings. This will enable the next executive to perhaps re-instigate small awards to members to undertake research projects once the GST matters are sorted out.

If the Society is to become a truly professional body that promotes and furthers the discipline of Entomology it will need to become more involved in political debates and education of the public. This will require money. Good ideas without money to see them through remain just that – good ideas. This dilemma was perhaps recognised by the founders of the Society. The first object of the Society is in fact to create wealth. A major challenge for the next executive is in fact to continue building up the Society's reserves so that we can in fact appoint a paid executive officer. We wish them well!

Finally I'd like to take this opportunity to personally thank the members of the executive and regional councillors for their efforts on behalf of the Society. That time spent in what is most likely called "unpaid community service" is much appreciated. I would particularly like to thank the members of core executive in Brisbane, our Secretary, Dave Walter (ably assisted by Heather Proctor), our Treasurer, Veronica Brancattini, and Carmen Coombs, who stepped in and organised us out of many a hole!

Finally I'd like to thank my wife Jacinta and family for putting up with yet another impost on time. I am

sure someone appreciates it!

Meron ZALUCKI

Society Executive Meeting

13 July 2000, Knoxfield

Present: Peter Ridland, DeAnn Glenn, Violeta Traicevski, Nancy Endersby.

Apologies: Ian Endersby

DeAnn Glenn tabled a letter of resignation as AES Secretary and Regional Councillor (Victoria) to take effect on 1st August 2000, due to her recent acceptance of a new position based in Adelaide. Peter Ridland moved that DeAnn's resignation be accepted with regret. Seconded by Nancy Endersby.

Peter Ridland proposed that after consultation with the AES Council, Nancy Endersby be appointed as Secretary to fill the casual vacancy. Council will be advised of this proposal by e-mail.

Peter Ridland moved that Violeta Traicevski be appointed as Assistant Secretary. Seconded by DeAnn Glenn.

Ross Field and Cathy Mansfield have agreed to be Regional Councillors for Victoria. LeAnn Beanland is keen to help the Executive in some capacity and Peter Ridland suggested that she could be the Irymple coordinator for *Myrmecia* articles. Kyla Finlay could be *Myrmecia* coordinator for IHD. The role of the Regional Councillors is to raise the profile of the Society. They should be encouraged to hold state meetings or seminars. DeAnn Glenn advised that we need to update the e-mail list of members for use by the new Regional Councillors.

Operations manual needs to be obtained. Retiring Executive is to send it.

The retiring Treasurer has been keeping a database of members which we must obtain. Violeta Traicevski suggested that unpaid members should be identified and contacted when we obtain the database. GST was discussed. The first task of the new Executive will be to sort out what to do about GST and to adjust subscriptions accordingly. Peter Ridland and Nancy Endersby will meet with the retiring Treasurer in Brisbane in August.

Laurence Mound has forwarded AES correspondence which has been sent to the Business Manager (position no longer occupied). DeAnn Glenn, Nancy Endersby and Violeta Traicevski have been dealing with the correspondence.

Peter Ridland has informed Peter Merriman that the AES Executive has been transferred to IHD employees. Violeta Traicevski will arrange for an AES pigeon hole to be labelled.

ODE TO STERNORRHYNCHA

Jon Martin of the Natural History Museum gave an instruction course on the identification of aphids, psyllids, whiteflies and coccids at the University of Western Sydney, 16-20 April. The course members, **The Sternorrhyn Kids**, (Allojodidae; Billobidae; DiAspidae; Glynnorrhyncha; Grimmnococcus; Jimnosensus; Jonontherodidae; Psuedobakkus; Rosstrum; Siphuncu Lee; Tingquilocular) provided Myrmecia with the following coarse summary:

From London Town to Stable Square,
we bought him here from over there.
Whitefly, aphid, psyllid and scale,
Jon's short workshop dare not fail.
Tubercules, spiracles, or length of their hairs,
how do you find them? who really cares.

Down the straight and round the cauda,
look for the setae on the border.
When you're searching for the claw,
is there one, or is there more?
Effete male scales cannot feed,
one quick flight to sow their seed.

Alates, apterae, mummies and nymphs,
a challenge indeed for scientist wimps.
Virgin-birth aphids are well out of luck,
all they can do is sit there and suck.
With so many bits and pieces to count,
you'll get bloody nowhere without a good mount.

Poor silly psyllids flip in reverse,
leapin' from safety to something much worse.
Taken to bits and spread under covers,
hope no-one sees them, especially their mothers.
With tutor devouring the sugary lerps,
The poor pommie bastard's been on the turps.

Lectures on whitefly pupal taxonomy,
much less boring than cereal agronomy.
After the sassy puparial splits
they sit and they preen their white waxy bits.
Yeah! Jon Martin
Pretty guy for a whitefly!!

SURVEY OF EMPLOYMENT

ENTOMOLOGISTS IN AUSTRALIA, 2000

An initial survey was carried out in 1996 by Peter Bailey (SARDI) to gather information on the trends in employment of entomologists in Australia and this was published in 'Myrmecia' (1996; Vol 33 part 2),

Table 1. Respondents to employment questionnaire

	No. of Institutes/ Enterprises in Sample	Paid Positions (Dec. 1999)	Honorary Positions (Dec. 1999)
CSIRO	3	163	28
Fed. Govt.	3	23.6	0
State/Territory Govt.	11	136.9	0
Universities	18	40.5	4
Museums	6	16.3	7
Private	7	17	0
Total	**47**	**406.3**	**39**

and was also presented by John Jennings and Peter Bailey at the 1996 AES conference in Lincoln University, New Zealand. A similar survey was carried out in mid-2000 to ascertain recent changes in employment, and the results of this are presented here.

The Survey

The surveys in both 1996 and 2000 were aimed at employers of entomologists in Australia. For the purposes of each survey, an entomological employee is someone who occupies a position which requires entomological training or experience, and who calls themself an entomologist rather than, for example, a geneticist, agronomist or pest exterminator. Acarologists were included in the survey, as were administrators or managers closely associated with entomology. The surveys also included unpaid and honorary staff. The survey method in each case was by postal questionnaire. Unfortunately the results of the two surveys are independent as the respondents to each survey were not the same.

Respondents to the survey were grouped according to their source of funds and nature of work. Analysis of the respondents is shown in Table 1. The response rate to the survey was 42.5% (48 responses of 113 sent). Private employers included agricultural chemical companies and private insectaries. Government Agencies included grain handling organisations and statutory bodies. University Departments were kept separate, as one university may have a number of separate departments that employ entomologists. State and Territory agencies included departments of agriculture/primary industries, health, forests, lands, and conservation.

Changes in employment

The employment records from the respondents are shown in Table 1. These results indicate that the number of jobs has increased slightly during the period between surveys. There is also some optimism amongst most employers that the aggregate level of employment of entomologists will be maintained or slightly increased in 2000.

A break-down into category of employer (Table 2) indicates that the greatest increases in employment of entomologists during the survey period were in State and Territory Government and Federal Government agencies. CSIRO divisions experienced a contraction of staff in both the professional and technical classifications. Employment of entomologists by museums had declined in the previous survey (1990-1995), but appears to have now stabilised. University and private employers have also remained relatively stable.

Honorary positions

A number of organisations "employed" honorary entomologists, who numbered about 10% of the total work force. This figure is similar to that for the 1996 survey.

Gender and Tenure

The overall gender ratio is about 1:84 female:male entomologists (Table 3). This figure was similar in the 1996 survey. The ratio of staff with indefinite tenure is 1:2.3 compared with 1:2.4 in the 1996 survey.

Jobs in 2000: skills required

Employers were asked the minimum qualifications for jobs they have filled, or intend to fill during 2000, including those positions awaiting funding. There are 30.8 positions to be filled or were been filled in 2000, representing about 6.9% of all of the total positions projected for the end of 2000. In 1996, there were 44 such positions representing about 10% of all entomological positions. This may indicate that the turnover rate of entomological positions has declined since 1996.

The minimum qualifications required by employers in 2000 are mainly Bachelor's and honours degrees (Table 4), although about 35% of new positions require post-graduate training as their minimum qualifications. Very few positions are available for prospective employees with non-degree qualifications.

Table 2. Employment trends for entomologists 1996–2000

end 1996	CSIRO	Fed Govt	State/Territory Govt	Universities	Museums	Private	TOTAL
Entomologists	75	13	46.8	30.5	10	6	181.3
Ent. Techs	125	5	67.1	7.5	7.8	8	220.4
Honorary	24			2.5	7		33.5
TOTAL	**224**	**18**	**113.9**	**40.5**	**24.8**	**14**	**435.2**
end 1999	**CSIRO**	**Fed Govt**	**State/Territory Govt**	**Universities**	**Museums**	**Private**	**TOTAL**
Entomologists	62	18.6	70.8	30.5	10	7	198.9
Ent.Techs	110	5	66.1	10	6.3	10	207.4
Honorary	28			4	7		39
TOTAL	**200**	**23.6**	**136.9**	**44.5**	**23.3**	**17**	**445.3**
end 2000 (est.)	**CSIRO**	**Fed Govt**	**State/Territory Govt**	**Universities**	**Museums**	**Private**	**TOTAL**
Entomologists	66	19.6	69.4	29.5	9	7	200.5
Ent. Techs	112	5	64.1	9.5	6.3	11	207.9
Honorary	28			4	8		40
TOTAL	**206**	**24.6**	**133.5**	**43**	**23.3**	**18**	**448.4**

Table 3. Tenure of entomologists by gender

Female	CSIRO	Fed Govt	State/Territory Govt	Universities	Museums	Private	TOTAL
Indefinite (>3 y)	46.2	8	18.4	3	3.55	3	82.15
Indefinite (<3 y)			3	1		1	5
Contract (>3 y)	3		9	1			13
Contract (1–3 y)	12.4	1	14	6			33.4
Casual/Contract (<1 y)	3.6		5.5	1	0.25		10.35
TOTAL	**65.2**	**9**	**49.9**	**12**	**3.8**	**4**	**143.9**
Male	**CSIRO**	**Fed Govt**	**State/Territory Govt**	**Universities**	**Museums**	**Private**	**TOTAL**
Indefinite (>3 y)	92	11	51	16.5	12	12	194.5
Indefinite (<3 y)			1			1	2
Contract (>3 y)	8		9				17
Contract (1–3 y)	11	1.6	17	8.5			38.1
Casual/Contract (<1 y)	4		6	3	0.5		13.5
TOTAL	**115**	**12.6**	**84**	**28**	**12.5**	**13**	**265.1**

Table 4. Minimum qualifications for positions (n = 30.8) to be filled in 2000

Minimum qualification	PhD	Masters	Bachelors(hons)	Bachelors	Diploma	Certificate
No. positions	11	0	5	13.8	1	0

Table 5. Number of positions (n = 30.8) filled and to be filled in 2000

Agriculture	Taxonomy	Ecology	Medical	Forest	Urban	Conservation
14.5	6	4.2	2.5	1.6	1	1

The areas in which appointments will be made during 2000 are predominantly in primary industries (agricultural and stored products entomology and biological control) (Table 5).

Conclusions

The total number of jobs for entomologists has not varied greatly during the period of this survey, and is likely to remain this way during 2000. The majority of entomologists hold tenured positions with a reasonable expectation of employment until normal retirement. The decline in the indicative turnover rate from about 10% in 1966 to 6.9% in 2000 suggests that there will be some opportunities for new entrants to the field, but that opportunities are possibly declining.

The continuing use by a number of organisations of honorary staff indicates a level of interest by entomologists in their discipline that extends beyond the desire for monetary gain.

Employment of entomologists continues to be largely by publicly-funded institutions.

The main growth area was in Federal, State and Territory Government agencies with the CSIRO showing the greatest decline in employment. The minimum training requirement for the majority of new positions in 2000 is a Bachelor's or honours degree. The gender balance shows little or no change over the results of the 1996 survey.

In conclusion, I would like to thank the respondents, as without their freely supplied information, the survey would have been impossible.

John JENNINGS
Department of Applied And Molecular Ecology
Adelaide University, Glen Osmond SA 5064
Email: john.jennings@adelaide.edu.au

Australian Biological Resources Study

ABRS has been undergoing a significant re-ordering of its priorities and structure. To remain relevant and effective, a long-standing program like ABRS must respond to changes among its clients, including government. The Department re-assessed our capabilities to help us confront the nation's taxonomic impediment more aggressively, delivering high-quality taxonomic information to biodiversity professionals and other clients in a focussed and efficient manner.

Electronic publishing

One of the central objectives of ABRS – to document and disseminate information on biota – is now best served by moving to electronic publishing, both CD-ROM/DVD and WWW. Most of ABRS' products are reference works, with the majority of users requiring only selected subsets of information at any given time. Web-publishing allows access to a much wider audience, who can search for and extract specific material as it required. This, with easy updating, and rapid feedback makes this form of delivery, including interactive keys, attractive.

Printed versions of the *Zoological Catalogue of Australia* and the *Fauna of Australia* will be discontinued, but manuscript *Catalogues* that are currently in-house will be printed. Long production delays and escalating costs for the *Fauna* volumes have prompted the decision to move to web-based publishing. Future treatments will appear progressively in self-contained sections (such as families or superfamilies), such that material will be available as it is completed, rather than kept until all the components of a 'volume' are available.

Australian Biodiversity Information Facility (ABIF), for the web-based delivery of ABRS products, was established last year. This facility will be expanded with material from earlier *Fauna* and *Catalogue* volumes. Users should soon begin to see changes to the ABIF site at

Committee changes

The resources of the ABRS Advisory Committee are to be extended to encompass a greater range of sectoral contributions, including a range of taxonomic disciplines and representatives from the conservation movement, land-care, industry and community education. This is intended to bring a wider perspective to the Committee's work, with a focus on the application of taxonomic knowledge to environmental issues. The expanded Committee will take on a number of the activities of the discontinued Editorial Committee. Through its Participatory Program, ABRS will continue to support basic taxonomic research, as well as directed studies into groups or geographic areas that the Advisory Committee believes warrant particular attention.

Structural rearrangements

ABRS has been re-organised into a number of discrete scientific sub-programs that better reflect our diverse activities and the greater emphasis that will now be given to lesser known elements of the biota. ABRS will seek partnership opportunities and linkages with environment and other government programs to extend its resources and accelerate its activities. The internal reorganisation means that the first point of contact for ABRS should now be through either the Director or the appropriate sub-program leader:

Director (Acting), Dr Geoff Dyne (02) 62509442 <gdyne@ea.gov.au>
Invertebrates, Dr Alice Wells (02) 62509444 <alice.wells@ea.gov.au>
Vertebrates, Dr Graham Ross (02) 62509435 <graham.ross@ea.gov.au>
Protists & ABIF Fauna, Dr Keith Houston <keith.houston@ea.gov.au> (02) 62509436
Geoff DYNE

The Formidable Beetle Pests of Coconuts in New Guinea Islands

In PNG coconut is regarded as the tree of life, with some 250,000 small holders and their families depending on it for a living. Export earnings for 1998, mostly from Copra, stood at US$44 million. The fruit itself is a major source of daily food and income for the coastal people, and an important food source for village livestock. On many atolls and remote areas of the mainland, coconut is the only source of wealth.

A major constraint to coconut production in PNG is the severity of beetle pest infestations that has prevented replanting of large areas with improved hybrid seed nut. The beetle problem is so serious that, since early 1980s, it has halted several redevelopment initiatives in East New Britain and New Ireland provinces.

The culprit beetles belong to subfamily Dynastinae (Scarabaeidae). They are commonly known as rhinoceros beetles and attack coconut palms wherever they are grown. *Scapanes australis*, the Melanesian rhinoceros beetle and *Oryctes rhinoceros*, the Asiatic rhinoceros beetle, are the worst pests of coconut palms in PNG. *Scapanes* is a 4-6 cm long beetle, and is endemic to PNG, the Solomon Islands and Irian Jaya with five subspecies. The distribution of the four common subspecies is as follows:

S. australis australis (Boisd.) PNG mainland including Karkar Island.
S. australis brevicornis (Stern.) Milne Bay Province.
S. australis salomonensis (Stern.) Bougainville Island.
S. australis grossepunctatus (Stern.) New Britain and New Ireland.

Adults are good nocturnal flyers. Males use their strong horns to bore galleries in the base of fronds. The galleries eventually destroy the growing point in young palms. Despite the low populations of the beetles (<5 insects/ha; Bedford, 1975; *Bull. Ent. Res.* **65**: 109-116), beetle size and mobility results in serious damage to the palms. This damage attracts Black Palm Weevils, *Rhynchophorus bilineatus*. These lay eggs in the galleries, and the larvae cause new damage. Attack by the combined *Scapanes* and *Rhynchophorus* invariably kills young palms.

Extensive biological studies on the beetle pests in the last 25 years have led to no successful control measures. (Waterhouse & Norris, 1987; Biological control: Pacific
Prospects. ACIAR. Inkata Press Ltd, Melbourne: 122-127; Moxon and Hela, 1989; Annual Research Report. ARD, Department of Agriculture and Livestock, Papua New Guinea, 43-47.). Biological control studies have yielded disappointing results. Entomopathogens have failed to trigger epidemics as the beetle larvae live in isolation. No parasitoids have been recorded on *S. australis*, but parasitism of up to 10% adults caught in pheromone traps has been observed (Stathers, 1997; PNG CCRI Annual research review document, Entomology Section, p. 236-281.).

The limited impact of *Scapanes – Rhynchophorus* complex on coconuts in the PNG mainland has suggested that some effective natural enemies may be operating there. But four years of work failed to identify any biological agents of significance.

Insecticidal control of *Scapanes* is only effective if applications are repeated and this harms the environment (Smith, 1987; HARVEST 7(1): 28-30. Dept. Primary Industry, Box 417, Konedobu, N.C.D., Papua New Guinea.). In any case small-holders are too poor to afford insecticide applications, these usually costing US$100/ha/yr, and must be continued for several years. Hand-collection of adults from the galleries is a difficult job and severely damages the plant.

The idea of semio-chemical control of *Scapanes – Rhynchophorus* complex started in 1989 with initial studies to establish methods of communication in these beetles (Moxon and Hela, 1989). The *R. bilineatus* pheromone was isolated, but isolation of *Scapanes* pheromone proved difficult because of the low molecular weight of the pheromone, and the similar chemical properties of the components to the solvents used during GC analysis.

Since October 1997, studies aimed at developing the olfactory trapping of beetle pests of coconuts have received financial support from the European Union. Under this scheme, teams of French scientists from INRA, Versailles and CIRAD-CP, Montpellier, have provided advanced means of investigation and scientific back up to the olfactory trapping project. This has resulted in the accumulations of vast amount of data, now under publication, on semiochemical-based trapping. The pheromone of *S. australis* has at last been characterised. It is a mixture of three isomers and its components are among the smallest molecules identified in insect pheromones (70<MWs<90). In a poster presentation at the 16th annual meeting of the International Society of

Chemical Ecology (13-17.xi.1999, Marseille, France), Rochat and associates from INRA, CIRAD-CP and CCRI, Rabaul presented exciting and original results on the male calling behaviour, mode of pheromone emission and pheromone composition of *Scapanes australis*.

Mariau (1999; Year 2-Annual Report No.2, Nov. 1999 INCO – Project ERB 18 CT 970 199) reported that with the synthesized pheromone, at least as many insects were caught as with males in cages. The number of insects caught increased in line with the amount of pheromone emitted up to a maximum quantity of 50mg/day. As two components of the pheromone, which ensure maximum captures, are very common, the trapping techniques should therefore be inexpensive and face no particular technical difficulties (Mariau, 1999).

It should perhaps be mentioned that coconut is not the only crop to be devastated by notorious beetle pests in PNG. The activities of two other genera of Dynastinae, *Papuana* and *Eucopidocaulus*, have led to a severe decline in taro production in many areas. On the international scene the devastation caused by Colorado beetle is so bad that "in Russia they can hardly grow potatoes any more" (New Scientist, 19 ii. 2000, p.14). But here also olfactory trapping may be the way out. By measuring the strength of signals from electrodes implanted in the beetle's antenna, scientists in USA, are screening chemicals, mostly aromas extracted from potato leaves, for the most active substances that could be used to trap the beetles. Seemingly, the formidable beetle pests may not be all that invincible after all.

Ray KUMAR
UPNG, Papua New Guinea

Official State Insects

There has been a good response to the suggestion that an insect species be selected to represent each State and Territory of Australia. In particular, Tish Silberbauer sent a note to the Ozentomology list (see the Myrmecia website at http://www.agric.nsw.gov.au/Hort/ascu/myrmecia/myrmecia.htm for details of how to join the list) and generated some discussion which has led to the following suggestions so far. Some of these have been sent with considerable justification included but some have arrived just as a suggested name. Obviously there are many other suitable candidates so please send your suggestion, preferably by email, to Murray Fletcher before the end of the year (murray.fletcher@agric.nsw.gov.au)

Each State/Territory has an Act covering gazettal of emblems, logos etc and details of these are also being collected. Media publicity for the final candidates will be organised through our AES publicity officer Glynn Maynard.

AUSTRALIAN CAPITAL TERRITORY
Cooraboorama canberrae
Golden Sun Moth, *Synemon plana*

NEW SOUTH WALES
Bathurst copper, *Paralucia spinifera*
Bogong moth, *Agrotis infusa*
Green grocer cicada, *Cyclochila australasiae*
Red fungus bug, *Achilus flammeus*

NORTHERN TERRITORY
Leichhardt's grasshopper, *Petasida ephippigera*

QUEENSLAND
Birdwing butterfly, *Ornithoptera* sp
Giant burrowing cockroach, *Macropanethsia rhinoceros*
Hercules moth, *Coscinocera hercules*
King stag beetle, *Phalacrognathus muelleri*
Queensland fruit fly, *Bactrocera tryoni*
Ulysses butterfly, *Princeps ulysses joesa*

SOUTH AUSTRALIA
Nothomyrmecia sp. (Formicidae)

TASMANIA
Tasmanian hairy cicada, *Tettigarcta tomentosa*

VICTORIA
Eltham Copper
Golden Sun Moth (withdrawn)
Otways stonefly

WESTERN AUSTRALIA
Gilgy (purple yabbie type creature)
Julodimorpha bakewelli (Buprestidae)

Murray FLETCHER

WWW-Spinners

Our apologies, but there have been too many other problems this month to deal with this subject adequately. Attention, however, is drawn to three sites that are of interest to the editor. The first concerns the 2004 International Congress in Brisbane. The second includes remarkable pictures of European buterflies. And the third refers to the International Symposium in July 2001 on thrips and tospoviruses in southern Italy.

http://www.ento.csiro.au/ice2004/
http://www.netti.fi/~avanto/lepibase.html
http://www.keele.ac.uk/depts/aep/thrips2001

REGIONAL NEWS

AUSTRALIAN CAPITAL TERRITORY

CSIRO Entomology

Ray Akhurst and **Connie Angelucci** attended the 33rd Annual Meeting of the Society for Invertebrate Pathology in Guanajuato, Mexico (August 13-18) to keep track of developments in the use of *B. thuringiensis* and its insecticidal proteins. In September, **Liao Chunyan** graduated with a PhD from the ANU with a thesis on "The toxicology of *Bacillus thuringiensis* Cry1Ac insecticidal crystal protein in *Helicoverpa armigera*". Ray Akhurst and colleagues are now engaged (enmeshed?) in preparations for the 4th Pacific Rim Conference on the Biotechnology of *Bacillus thuringiensis* and its Environmental Impact" which will be held in Canberra 11-15th November 2001.

Jonathan Banks reports that he applied some of (**Robin Bedding**'s) nematodes last April to his 2 Ha apple orchard at Pialligo. Assessments of kill made by finding over-wintering larvae show over 90% kill by nematodes. He is now assessing the remaining codling moth population using light traps and looks forward to a successful suppression of the population to a level where pheromone control will again be effective this harvest.

'Butterflies of Australia. Their identification, biology and distribution' (two volumes, 1008 pp incl 70 colour plates) by **Michael Braby**, with the generous support of many people, was published in August in time for the International Congress of Entomology. The ABRS Zoological Catalogue volume on butterflies by **Ted Edwards** and collaborators is currently with referees. Ted Edwards retired from the ANIC in early October after 30 years of outstanding service towards our knowledge of Australian Lepidoptera. **Sharyn Wragg** has been appointed to assist **Marianne Horak** with her research on Phycitinae and Tortricidae.

Penny Greenslade has just spent three weeks at the Museum Zoologicum Bogoriensis working with three other Collembologists, two from France, and **Yayuk Suhardjono**, whom many of you will have met on her visits to Australia. They were preparing a handbook of Indonesian Collembola for the Fauna Malesiana series. Penny was unable to go to the Apterygotan Symposium in Ceske Budejovice in August at the last minute because of ill health but her four papers had already been accepted so all was not lost.

News from the Forest Entomology team is again tinged with nostalgia. After joining CSIRO Entomology in August 1997, **Mamoru Matsuki** ceased working for the organisation on the 30 September 2000. Mamoru has conducted much (this being the operative word here) excellent research into the role of cineole and sideroxylonal on the feeding of eucalypt-specific insect herbivores. He will be publishing his findings soon (forest entomologists will now be able to put the role of terpenes in insect-eucalypt interactions into their rightful perspective!). In addition, Mamoru and **John Scott** (presently in Montpellier) have in preparation manuscripts concerning the host specificity and potential threat Asian gypsy moth (*Lymantria dispar*) poses to Australian forestry. All in all, Mamoru had made a substantial contribution to the field, one that will have significant impact for a long time to come. We wish him all the very best in whatever pursuit he chooses. In other news, **Martin Steinbauer** has been collaborating with **Tom Bellas**, **Mike Lacey** and **Florian Schiestl** to extract, analyse and determine the physiologically active compounds in the pheromone of *Mnesampela privata*. Results have been especially promising to-date, including some exciting preliminary GC-EAD results. More to come...

Ian Naumann (AFFA) visited the Vic Ag Knoxfield laboratories in late September for a planning meeting of the National Pest and Disease Database. **Rob Floyd** also attended to represent CSIRO Entomology interests.

During the XXI International Congress of Entomology **Ebbe Nielsen** was elected Secretary/Treasurer (succeeding **Max Whitten**, who previously succeeded Laurence Mound!) for The Council of the International Congresses of Entomology; one of his first actions was to develop a Council homepage at www.ento.csiro.au/cice. In September he gave the key note address on biodiversity informatics to the Congress for the Very Large Databases in Cairo and participated in the second last meeting regarding the establishment of the Global Biodiversity Information Facility (GBIF) which now seems to become a reality in mid 2001 with support from some 20 countries including Australia.

Volume 3 of **David Rentz**'s *'Tettigoniidae of Australia'* is with the publisher and is expected to appear before the end of the year.

BioLink, the Biodiversity Information Management System, developed by **Steven Shattuck** and collaborators has now been formally released though CSIRO Publishing.

Laurence Mound has just returned from two weeks in Chile, courtesy of the Instituto de Investigationes Agropecuarias, Las Cruz, as part of a promising biocontrol project on western flower thrips using nematodes. Nectarines are being damaged at very low levels of thrips populations, but huge numbers

Renato Ripa and Fernando Rodriguez (INIA, La Cruz)
with Joe Funderburk (Florida) and Laurence Mound at Las Andes

UNSW's second Insect Monitoring Radar, Thargomindah, Qld, August 1999

disperse when lucerne crops are cut. Climbing La Campana in Darwin's footsteps, to sample the thrips that Charles so sadly overlooked, parts of the country can scarcely have changed. Farmers on horse-back still have stirrups like elaborately carved wooden shoes and spurs with big spiky discs. But table grapes now occupy the valleys, and irrigated avocado plantations rise in rows high into the hills. The extensive fertile valley around the city of Los Andes has some of the world's most spectacular cultivated fields, surrounded by the towering white walls of the cordillera. But it has a depauperate insect fauna, with just one dominant flower thrips species, and a flora that is 99% immigrant weeds. An invited lecture on thrips was delivered in Spanish, with much help from friends and considerable pleasure from the grower audience, who otherwise had to interpret the interpreters translations of Texan and Floridian Englllish.

Martin J. STEINBAUER
Regional Councillor

At the Australian Defence Force Academy, Canberra, the last 18 months have been a busy period for the radar entomologists, with the completion in August 1999 of the unit's second fully automatic Insect Monitoring Radar. **Ian Harman**, **Haikou Wang**, and **Alistair Drake** spent a week in Thargomindah, Qld installing the hardware, and after some further development of the software over the telephone link from Canberra the radar commenced observations a couple of weeks later. The unit runs for 10-12 h each night and has proved very reliable. The first IMR, at Bourke, NSW, has continued to perform well and has now completed 2 full years of operation. Haikou Wang developed some trickery that vanquished the Y2K bug and allowed observations to continue even as we passed into the new millennium!

Ian Harman and Alistair Drake serviced the two radars in February 2000, dodging heavy rains and rising rivers but requiring the services of the "flood truck" to cross the Bulloo into Thargo. Haikou Wang visited both units in July 2000 while on a survey of hosts and immature stages with **David Hunter** of APLC.

Alistair Drake took study leave during the second half of 1999, and spent time initially at APLC in Canberra with David Hunter and **Ted Deveson** and then in Britain for 3 months working at the Natural Resources Institute of the University of Greenwich in Chatham, Kent. Alistair's main project was drafting a book, coauthored by NRI's **Don Reynolds** and **Joe Riley** (both veterans of radar and video field observation exercises in Australia), on radar entomology and related technologies. He also gave a talk at the Royal Entomological Society's symposium on Insect Movement in London, where he met up with, among others, **Peter Gregg** (UNE, Armidale) and **Hugh Dingle** (UC Davis, California and UQ, Brisbane). At NRI, Alistair caught up with former boss (at CSIRO Entomology) **George Rothschild**, now a senior adviser with NRI.

Haikou Wang presented a talk on his analyses of data from the Bourke IMR at the AES annual meeting in Canberra in September 1999. IAN HARMAN visited CSIRO Telecommunications & Industrial Physics in Sydney to calibrate an IMR antenna, and can now estimate the speed and size of the insects the IMRs are detecting, and their numbers, with much greater confidence. In February, TIM DEAN arrived from Perth to start an MSc on the characteristics of IMR echoes. He has already contributed an algorithm for estimating the masses of the insects detected by the IMRs.

Alistair DRAKE

NEW SOUTH WALES

University of NSW, CERIT

The laboratories and offices of CERIT have taken on a new and refreshing look. Damage occurring in last years BIG hailstorm has been repaired, the floors resurfaced and the walls and ceilings repainted. Whilst clearing rooms was an arduous task, it provided the opportunity to do some long needed decluttering, and reorganisation and the results are much more comfortable for all concerned. Such a refurbishment proved quite disruptive, but somehow work went on apace in the midst of the chaos.

During the Olympic Games we were able to operate without too much disruption. Travel arrangements for **Julie-ann Short** and **Sarah Lunau** who commute from the northern suburbs, weren't too badly affected, while those of us who drove to work needed special access stickers for the days the road cycling races were on. During morning tea and lunch breaks staff were able to stroll out to Darley Road/Centennial Park and watch the racers headed up to Bronte Beach, and then 15 minutes later, headed back to the SFS. **Patrick O'Rourke** was content to watch the Olympic coverage on TV, while **Chris Orton**, **Merilyn Baker**, Julie-ann Short and Sarah Lunau had tickets to see handball, volleyball, beach volleyball, gymnastics, soccer, hockey, equestrian, swimming and athletics. All agreed that the Olympic experience was a real "blast"!

Julie-ann Short is having some leave from the mossies and cockroaches to volunteer for the Paralympic Games. She will be a blue sleeved "Field of Play" Official for the volleyball. Sarah Lunau is also having some time away from the blowflies, assisting her partner in a research project in Venice.

Patrick O'Rourke is ready to save our lives should it be needed having recently completed a course to update his accreditation as a First Aid Officer.
CERIT hosted the October monthly meeting of the Entomological Society of NSW, and in August hosted a meeting of the NSW PSITAB Pest Management Committee.
Some visitors to CERIT braved the refurbishments and enjoyed the splendid new surroundings. They have included: **Roger Sargent** and **Andrew Smith** (Schering-Plough Animal Health – Aust); **Mike Walker** (MarketShare Pty Ltd); **Chris Virgona** (Starpharma); **Jim Rothwell** (Elanco Animal Health); **Anand Surujpal** & **Michelle Wilson** (SC Johnson & Son); **Phil Morrow**, **Jyri Kaapro** & **Nate Royalty** (Aventis).

Julie-ann SHORT

University of Western Sydney
Congratulations to **Adrian Nicholas** on being awarded a PhD at the recent UWS graduation. Adrian investigated the status of woolly aphid in an Australian apple orchard under IPM. **Andrew Beattie** has been active over the past several months. In July, he visited South Korea to discuss (of course) spray oils, gave a seminar on the potential use of spray oils in cotton at Narrabri, and attended the Cotton conference in August. **Robert Spooner-Hart** has been spending time in the rapidly expanding olive groves in NSW, and given seminars and field days at Mudgee, Tamworth, Mittagong and the Hunter Valley. We welcome **Nguyen van Liem** from Vietnam, who is commencing a PhD investigating fruit fly behaviour in response to spray oil deposits.

Entomological Society of NSW
The Society has had another interesting series of meetings. July: at UWS Parramatta campus, **Graeme Goodyer** (AQIS) "The Day of the Trifids: Research Gone Awry". August: at UWS, **Swapna Banu** (UWS-H PhD student) "Behaviour of greenhouse thrips in response to different oil sprays". September: at UWS, **Keith Campbell** (ex NSW Forestry) "Plague Phasmatids". October: at CERIT, UNSW, **Chris Orton** (Director CERIT)."Cerit and its work", including a tour of the facilities.
The Society is holding a Conference/collecting weekend on November 11-12 at Berringa Environmental and Conference Centre, Grose Vale (foothills of the Blue Mountains). The Society would like to encourage participation of postgraduate or honours students. They anticipate an informal meeting with a combination of short papers, posters, collecting, relaxation and social interaction. Cost per person is $68 inclusive of Friday and Saturday night accommodation and all meals from Saturday breakfast to Sunday lunch. Contact Dinah Hales for further information: DHALES@rna.bio.mq.edu.au.

Robert SPOONER-HART
Regional Councillor

Orange Agriculture Institute
Graham Thwaite co-convened one of the many symposia held as part of the 21st International Congress of Entomology at Foz do Iguaçu, Brazil in August. "Codling Moth: Management Strategies for the 21st Century" provided a far ranging review of the status and current control measures for this important pest of apples and pears. With the loss of several key insecticides used in conventional control programs through resistance development and regulatory action, future management techniques will include further development of mating disruption and sterile insect release, probably supplemented with "soft" chemicals as required. An interested audience listened to the 11 presentations including two given by Australians **Margaret Williams** (DPIWE Tasmania) and **Graham Thwaite**. It is expected that the reviews will be published in a book scheduled for the end of 2001.
Fresh back from Brazil, Graham then headed for the Adelaide Hills to discuss recent developments in codling moth management with the local apple and pear industry. There he caught up with **Peter Bailey** (SARDI) and later presented a seminar at the Waite Institute.
It's been business as usual for the Collections Unit with fruit fly and western flower thrips monitoring beginning to pick up again as the snow melts off Mt Canobolas. Work on the ASCU website continues with details of our type holdings, including images of the primary types held, being added to the list of species names previously posted. Over the last couple of months, the type holdings of Coleoptera, Blattodea, Orthoptera and Lepidoptera have been completed and the Hymenoptera and Thysanoptera partially completed. Each specimen data label is being checked against the original published data to ensure the validity of the types and notes have been added to clarify details or identify where discrepancies have been found, particularly where errors have been made by original authors.
Murray Fletcher and **Michael Priest** attended a national pest and disease database meeting at IHD Knoxfield in September. While in Melbourne, we took the opportunity to spend time with our counterparts in Agriculture Victoria, **Mali Malipatil** and **Ian Pascoe**. We also visited the new Museum Victoria, soon to be opened, and discovered that the entomological staff were all on holiday. Those Museum staff that were at work were in a staff meeting, so we spent

a half hour or so getting to know the security staff at the entrance before spotting **Ross Field** who, to our immense gratitude, kindly showed us through the new insect section and gave us access to the collections. Responding to a tip from NSW Agriculture, AQIS and customs officials at Sydney Airport have discovered eight queen bees hidden in pens in the pocket of an Australian beekeeper returning from Europe. There is a very strict protocol controlling the introduction of exotic bees into Australia to avoid the possibility of introduction of exotic bees diseases and pests, particularly Varroa mites and tracheal diseases caused by mites. This attempted smuggling puts at risk not only the Australian beekeeping and honey production industry but also $2 billion worth of agricultural production that depends on bee pollination. Congratulations are extended to AQIS and customs and to whoever in NSW Ag was responsible for the pen tip.

University of Sydney, Orange
Zamir Hossain has submitted his PhD thesis on enhancing biological control of insect pests in lucerne by strip cutting. **Geoff Gurr** is getting over food poisoning after his recent visit to Beijing. Prospects for collaborative research to produce insect-resistant tomato varieties look promising. This also involves **Des McGrath** of Bowen Horticultural Research Station. **Leigh Pilkington**'s field season looking at insect vectors of the lucerne yellows phytoplasma will get under-way just as soon as his most recently broken bone has mended.

Murray Darling Freshwater Research Centre
John Hawking and **Gunther Theischinger** spent last week in the field with a smash and grab raid along the east coast, from Sydney to Rockhampton. They were trying to collect the last few dragonfly larvae that they need for their forth coming field guide to the adults and larvae from Australia. John also collected pyralid larvae for the much awaited key – which should eventuate at the next Taxonomy Workshop.
Robert Cook has handed over the "Biological assessment of Paper Mill discharges into Eight Mile Ck" project to **Melanie Pearson** while he pursues a leadership role for the Campaspe environmental flows project. In addition to the Paper Mill work, **Melanie Pearson** is continuing sorting and identifying aquatic invertebrates for the MDBC biological monitoring project being conducted along the Upper River Murray, near Albury.
John Hawking and **Melanie Pearson** attended the ASL conference in Darwin, John presented a paper on pyralid life history and Mel presented results from her honours research from La Trobe University (Life histories of baetid mayflies) Pre Conference, **John Hawking** had a two week tour of Kakadu sampling for (you guessed it) pyralids and dragonflies with **Chris Humphrey** and **Fred Bouckaert** (ERRIS). The second half of this year again brings students from La Trobe University for work placements. **Melina Entwistle** is working on Baetidae (Mayfly) and its distribution while **Megan Clarkson** is analysing the shrimp data collected from the Campaspe project.

Murray FLETCHER
Regional Councillor

University of New England, Armidale
Peter Gregg and **Alice Del Socorro** have been tripping around again, flying round the world to visit a laboratory in Scandanavia, IACR-Rothamsted in the UK, and then on to Iguazu Falls for the International Congress of Entomology in Brazil. Alice was also able catch up with her family in the Phillipines. **Tish Silberbauer** and **Dave Britton** were left to hold the fort in Armidale.

Australian Cotton Research Institute, Narrabri
Several entomologists from Narrabri attended the International Congress of Entomology in Brazil in August. They were: **Garry Fitt**, **Martin Dillon**, **Robert Mensa** and **Jonathon Holloway**. Jon Holloway has since resigned from NSW Agriculture and has taken up a position with Aventis in Melbourne.

Tamworth Centre for Crop Improvement
Emma Cottage and **Robin Gunning** also turned up in Brazil for the conference after spending a marvellous week trekking high up in the Peruvian Andes. Robin returned home via the UK after having talks with IACR-Rothamsted insecticide resistance researchers. Emma stayed in the UK for 3 weeks longer to catch up with family and perseu some of her Ph. D. studies at Rothamsted in Alan Devonshire's lab. Rex and Marcel were most relieved when Emma and Robin finally came home!
John Hosking recently avoided the Olympic Games by heading out west with his family to explore the desert.

Robin GUNNING
Regional Councillor

NORTHERN TERRITORY

Csiro Sustainable Ecosystems
Tropical Ecosystems Research Centre (TERC)
We now have a new name, with 3 October 2000 marking the formal establishment of CSIRO Sustainable Ecosystems, formed through the merger of Wildlife and Ecology and four programs from within

Robin Gunning's view of Foz Iguaçu - complete with rainbow

Graham Young in pursuit of a pelican towel thief

Tropical Agriculture. Apart from the odd prior discussion as to what the newly merged division should be called, the invertebrate work continues! In a rare event there was no need to travel, with **Alan Andersen**, **Tracy Dawes-Gromadzki** and **Lyn Lowe** attending the Australian Entomological Society's 31st AGM and Scientific Conference held in Darwin at the Northern Territory University, in late June. The conference theme was "Insects in the Monsoonal Tropics" (hence the lack of travel!), with Alan presenting a paper on the use of a simplified, rapid ant sampling protocol that can be incorporated into wildlife survey, as part of routine land monitoring and assessment programs. Tracy presented a paper on the effectiveness of different baiting methods in assessing subterranean wood-feeding termite assemblages in tropical savannas. Lyn presented a poster of her work on the spectacular Leichhardt's grasshopper *Petasida ephippigera*.

In early August the TERC held their annual Top End ecology training course for teachers. Alan and Tracy gave presentations on invertebrate biodiversity, fire ecology and management (Alan), and termites of the Top End (Tracy) with presentations also covering landscape, climate, vegetation and feral plants and animals, given by some of the "plant and backbone" researchers from TERC. In late August Alan Andersen and **Ben Hoffmann** presented papers at the International Congress of Entomology in Brazil. On the 27th of September a workshop was held at the Northern Territory University, where the main findings from CSIRO's Kapalga Fire Experiment were presented. Alan introduced the experiment and presented the main findings for the invertebrate research component. These included (i) the extreme resilience of most invertebrate groups to fire; and (ii) for those groups that were fire-affected, the sensitivity of ground-active groups to late fires, in contrast to grass-layer groups that were influenced by whether or not a fire actually occurred, rather than fire intensity. Tracy Dawes-Gromadzki is now confined to a microscope and computer, after spending much time in the field hunting termites. Identification and writing is underway for the sections of termite work concerned with (i) temporal variability in species richness, abundance and foraging activity of subterranean termites and (ii) the development of a standardised sampling protocol for termite assemblages, in tropical savannas. **Hazel Brown** has now moved from spiders to termites, helping Tracy with her termite research. **Tony Hertog** has been busy working with the Parks and Wildlife Commission of the NT conducting a fauna survey on Melville Island, and is continuing to count and identify the NATT ant samples to species. Lyn Lowe has been busy identifying crickets from the Kapalga Fire Experiment.

Tracey Churchill is continuing to find some interesting spider taxa from surveys conducted across a wide range of localities across Australia. This work was in collaboration with partners of the Tropical Savannas CRC, with the projects involving the assessment of various land use practices. **Gus Wanganneen** is continuing to process material from the Kapalga Fire Experiment and is helping Tracey refine the process of taking photos of spider genitalia with their new digital image capture system!

NT University

The insect vector trials of Ros Blanche and Janine Lloyd have now expanded to include more leafhopper species and host plant species. The initial focus was on the ability of *Chiasmus varicolor* to transmit white leaf phytoplasma between couch plants, and from couch to sugarcane. Now the ability of *Orosius argentatus*, *Batracomorphus angustatus* and *Austroagallia torrida* to transmit Australian grapevine yellows phytoplasma among strawberries, and from strawberry to bean, celery and perwinkle is also being tested. This is a collaborative effort involving other members of **Karen Gibb's** molecular biology team at NTU and **LeAnn Beanland** of DNRE, Victoria. LeAnn will visit NTU to help orchestrate the tests but meanwhile Janine is kept busy growing large numbers of plants, and trying out various innovative cage designs for the trials.

Peng Renkang recently lectured second year ecology students on social insects in general, and green ants in particular, while **Ros Blanche** took the same group for a session on the importance of insect ecology to humans.

Medical Entomology Branch

There have been a few staff changes in the branch with **Andrea Wilson** moving on to resume her nursing career and we all wish her well in her new direction. **Catherine Goody** has now settled in as the new administration officer, and the entire branch is benefiting from her welcome assistance. **Bernadette Haigh** has gone on maternity leave and is now the proud mother of Andrew. Bernadette's replacement for a year is **Allan Warchot**, a local recruit from NTU, and the branch is looking forward to his start.

The branch is moving into the Darwin salt marsh mosquito control period. The first aerial control operations have been successfully carried out by **Jane Carter**, **Gwenda Hayes** and **Brett Brogan**. Jane is now taking on more operational matters. Between malaria case investigations, Gwenda is reaching the

finishing stages of a project looking at the application of GIS in control of mosquitoes in Leanyer swamp and this will allow better visual appreciation of our problems in maintaining control. The routine mosquito identifications from regions has been tapering off to the pleasure of Brett, **Adam Parrot** and **Sandy Keely** who have been shouldering the brunt of the identifications. Brett is handling the extra exotic mosquito surveillance following risk incursions as a result of increased vessel arrivals from Timor. **Peter Whelan** has been busy on a number of projects including, a workshop to stop an effluent swamp in Alice Springs, an investigation to create a big sea water lake near Darwin, an investigation of mosquito problems in a small community near coastal wetlands, and a Defence exercise on a simulated Japanese encephalitis incursion into WA and the NT. Peter has also been busy writing up papers for the last arbovirus conference and preparing for the Mandurah WA mosquito course in October. A new project on the horizon for the branch is the start of base line mosquito monitoring for a big new gas plant for Darwin. **Martin Shivas** is proceeding with the biting midge investigations near Palmerston and the use of diversionary lights.

DPIF Entomology Branch

The "build-up" (very hot and humid pre-monsoon weather) has hit the Territory and things are warming up with lots of action amongst the insect communities. Due to the change in weather, the Ento team have been inundated with lots of calls from householders regarding mouse spiders, huntsmen and orb-weaver spiders. **Stuart Smith** has returned to his duties in the Branch after acting in **Ted Fenner's** position as Chief Quarantine Officer. Stuart has been busy attending vast quantities of meetings ranging from exotic plant pests and diseases to tele-conference interviews. In the second week of October he managed to escape from the constantly ringing phone to do some field work at Douglas Daly Research Farm.

The Branch attended their annual Entomology Branch Conference at Mirambeena Resort along with invited speakers from other Divisions. Staff presented talks on the progress of projects and discussed results obtained in the previous year. Future collaborative projects between Divisions were also discussed. While all this was going on **Graham Young** was enjoying a holiday on the beach in Naxos, Greece where his towel was confiscated by the island's pelican mascot.

Graham Brown has persisted with his identification of Quarantine interception specimens as well as managing to continue with his monitoring on the forestry plot of *Acacia mangium* on Melville Island. During September, Graham accompanied **Megan Hoskins** on field visits to citrus, mango, maize and cucurbit properties in Katherine. Megan has been busy monitoring her citrus and cotton crops and presenting talks at the Katherine Rural College and at the Katherine Kalano Aboriginal Community Farms to discuss insect monitoring, life cycles and control in various crops. **Lanni Zhang** has continued with her trials on "softer" insecticides for the control of mites, aphids and caterpillars on chillies. In her world of mite taxonomy she has discovered an interesting histiostomatid mite which was phoretic on a weeds bio-control agent.

Michael Neal has been braving the harsh Territory climate and continued with his *Mastotermes* baiting trials and updating the departmental booklet on the Aggregation and Baiting Techniques of *Mastotermes darwiniensis*. In the evenings he relaxes with a game of cricket to take away the stresses of counting thousands of termites. **Heather Wallace** has joined the Termite Group and has a contract position here for 12 months. Heather's experience in Entomology and general enthusiasm makes her a valued contribution to the group. She is also grateful that she has a calculator! **Elliott Crowson** has joined **Kim Bui** (the Asian Vegetable coordinator of the Northern Territory Horticultural Association) on field visits to grower properties where Elliott has provided Kim with training on insect monitoring and control recommendations.

Deanna Chin, **Haidee Brown** and **Delmae O'Connor** (from Territory Parks and Wildlife) have started a project on the fruitpiercing moth *Eudocima materna* to study its life cycle and host preferences in the Top End. Deanna and Haidee have also carried out a brief survey on the distribution of the larval host plants and have found some really good sites close to the free beach!

Martin SHIVAS
Regional Councillor

QUEENSLAND – NORTH

Australian Quarantine Inspection Service, Mareeba

Society members of far north Queensland arrived at a shortlist of insects we would like to see as our official State Insect. The ultimate favourite was the King Stag. It was pointed out that since the Qld Ento. Soc. has adopted this guy as an emblem, it would be incongruous to have 'two' state insects.
You can guess which two butterflies were suggested.

A few comments on the Ulysses/Dunk Island Blue: its range misses Brissy, but its already associated with the tropical lifestyle in QLD, and is used heavily to promote tropical island retreats. The second butterfly was the Birdwing, whose range extends to northern NSW. It is also one of the most well known of Australian butterflies. I think the public would love either of these. The fourth favourite was the Hercules moth, just because of its giant super-size and beauty. One suggestion was the giant burrowing cockroach, which, although a QLD insect, would probably be associated with NSW. We got a few pesty suggestions, one being Bactrocera tryoni (!!), reason being was that it was well known amongst QLD fruit and veg growers. Another was spiraling whitefly ... erk!! Well, I guess that would fit in well with the red deer and the brolgas on the coat of arms!!

Kylie ANDERSON

QUEENSLAND - SOUTH

Geoff Waite, Harry Fay and Kerry Huxham attended the XXI International Congress of Entomology in Iguassu, Brazil in August (all self-funded due to the refusal of our politicians to recognise the value of international conference attendance), presenting a paper and three posters between them. Despite a few problems travelling between conference venues, everyone enjoyed the conference with new contacts made and old ones reaffirmed. Of course the Iguassu Falls were magnificent! **Chris Freebairn** who works with **Dan Smith** on citrus IPM continues to delve into the ecology and management of citrus jassids. Chris is also an accomplished photographer and his entries in the Photo Competition at Iguassu drew high praise and won an 'Honourable Mention' for his photo of a double-headed hawkmoth.

Geoff Waite accompanied by **Neil Greer** (Horticulture), represented 'The Better Berries Team' from Maroochy Research Station, at the 4th International Strawberry Symposium held in Tampere, Finland in July. While there they bid for the 2004 Symposium and were successful in winning it for Brisbane. This conference will follow the XXII International Congress of Entomology at the Brisbane Convention Centre and we look forward to the attendance of strawberry entomologists at both.

Dan Smith has been awarded a 'Graham Gregory Medal' by the HRDC for his long and successful contribution in the development and implementation of IPM for the Queensland and Australian citrus industries. Dan will be presented with the award at a special ceremony to be held in Sydney on 20 October.

Geoff Waite has taken over the role of Entomology Professional Development Leader for the Queensland Horticulture Institute, from **Harry Fay** who has carried out this role for the past two years.

Frank Page has started a new HRDC project called "Alternative strategies for the integrated management of outbreaks of plague thrips and apple dimpling bug in apples". Frank has recorded the first record of serious damage to apples at Stanthorpe from *Frankliniella* sp., presumably western flower thrips (typical severe pansy spot damage) which may have blown in on the northerly winds from the Lockyer Valley. A laboratory bioassay showed the thrips to be resistant to twice the recommended rate of fluvalinate and to normal rate chlorpyrifos.

Qazi Razzaque has been awarded his PhD degree for research on the Duboisia flea beetle, the major pest of Duboisia in plantations. His supervisors where **Errol Hassan** and **Neil Heather**. Qazi's research revealed new and important knowledge of the origin of flea beetle infestations relevant to an integrated control strategy. Errol and Neil are also currently supervising a PhD student from PNG, **Takis Solulu**. Takis is working on oil palm pests with emphasis on the giant African snail, and will spent some time in PNG to undertake his field experiments. Errol and the Centre for Pesticide Application and Safety (CPAS) have a new project evaluating the impact of large droplet placement on cotton. This project is supported by the Cotton Research and Development Corporation (CRDC).

Brad SCHOLZ
Regional Councillor

Griffith University

Tropical Fruit Fly Research Group

The fruit fly lab has expanded in the last few months with the arrival of **Boaz Yuval** from Israel. Boaz is a Mediterranean fruit fly worker (and former medical entomologist) who will spend twelve months sabbatical leave with the group.

In September, **Dick Drew** and **Meredith Romig** attended the end of project review of the FAO-funded Vietnam fruit fly project to which Dick has been acting as an external consultant over the last eighteen months. The review went well and it is hoped work will continue under new funding. On the way to Vietnam, Dick stopped in Malaysia and spent a few days with UQ Entomology graduate **Dr S. Vijaysegaran**, who is now Assistant Director and Head of the Pest & Disease Management Programme at MARDI's Horticulture Research Centre. Dick's purpose in the stop-over was to collect fresh specimens of the *Bactrocera dorsalis* complex, for the new project developing a LucID key to these

species.

Tony Clarke spent two weeks in early September interacting with members of the PNG Fruit Fly Project. One week was spent at NARI's research station at Keravat on East New Britain, a pleasant locality to be based, although the Rabaul volcano was particularly active. East New Britain is facing an emergency with an incursion of banana fruit fly (*Bactrocera musae*) in the Rabaul area of the Gazelle Peninsular. Banana is the staple crop of the region and any threat to the crop will have serious implications for food security.

Both **Raghu** and **Narelle Power** have successfully completed their confirmation of PhD candidacy seminars and are now fully-fledged PhD candidates. Well done.

Honours student **Aki Nakamura** is finishing data analysis for his project on litter invertebrates as indicators of the state of rainforest revegetation. One of the major findings is that coarsely identified millipedes, centipedes, isopods and amphipods are as useful as ant genera in identifying structurally different habitats. His research will be presented at the annual Rainforest CRC meeting in November.

Carolyn Polson, also an honours student, is struggling through a multivariate morass to extract meaning from her wetland macro-invertebrate data. One of their supervisors, **Heather Proctor**, is anticipating a huge influx of mites when pitfall traps and Tullgrenates from Rainforest CRC work in the Atherton Tablelands arrive in November. In the meantime, she and **Dave Walter** (University of Queensland) are busy compiling ABRS-funded LucID keys to soil mites.

University of Queensland, Department of Zoology & Entomology

Golam Nabi Azam has submitted his PhD thesis "Ecological studies on the Chilean predatory mite, *Phytoseiulus persimilis* (Acari: Phytoseiidae)".

Dr Ian Golloway, newly appointed Director of the Queensland Museum, has been appointed as an Adjunct Professor of the Department.

In August and September, **Des Foley** and **Evan Schmidt** were in Madang, PNG, collecting *Anopheles* mosquitoes for a taxonomic revision and construction of a simplified key to the *An. punctulatus* group of malaria vectors. Amidst this mosquito collecting and pinning frenzy, Des attempted to capture on film the rather bizarre behaviour of the mosquito *Malaya*, which mesmerizes ants then takes food from their mouths (true!). Des hopes this can be used in a teaching module about mosquito diversity.

The Department has very kindly agreed to support the next International Congress of Dipterology, to be held at the University of Queensland from 30 Sept-5 Oct 2002. A number of members of the Department are on the Organising Committee (**David Yeates, David Merritt, Margaret Schneider, Des Foley, Jeff Skevington, Chris Lambkin**). During the Congress about 300 delegates from all around the world will descend on Brisbane to share their interest in true flies. Symposia will range from systematics, biodiversity, genomics, population genetics, to forensics and economic impacts. All members of theSociety are very welome. Check the Congress web site for updates and details at http://www.uq.edu.au/entomology/dipterol/diptconf.html.

Shaun Winterton won the Phil Carne Award for the best student publication in the Australian Journal of Entomology over the past 12 months. Shaun's prize was an all expenses paid trip to Darwin to collect the prize and present his work at the Annual General Meeting and Conference of the Australian Entomological Society. The winning paper was Winterton, S.L., M.E. Irwin and D.K. Yeates 1999. Systematic revision of the *Taenogera* Krober genus-group (Diptera: Therevidae), with descriptions of two new genera. Australian Journal of Entomology, 38: 274-290. Shaun is a recent PhD graduate from the Department who has just left Australia to pursue postdoctoral research at North Carolina State University. Shaun's PhD work was on the systematics of agapophytine Therevidae (stiletto flies).

Myron Zalucki, Wayne Rochester, Gimme Walter, David Yeates, and **Pat Bouchard** attended the XXI International Congress of Entomology in Iguassu Falls Brazil from August 20-26 where they all presented their work.

Grants: UQ New Staff Research Start-up Fund - The origin and evolution of Australian butterflies: phylogeny and biogeography of the mistletoe host-associated Pierinae. **M F Braby** $10,000. **Glen Graham** - Cotton Research & Development Corporation "Population genetics of heliothis migration, recruitment and origins", $377,677 (2000-2002).

Alan Fletcher Research Station

Michael Day has just returned from spending time with Plant Protection Research Institute in South Africa looking at the biological control of lantana. Michael reports that *Falconia intermedia* (Miridae) has severely damaged lantana in a number of areas and that PPRI are working on a number of other promising agents. *F. intermedia* is being released in Qld and NSW and it is hoped that it performs just as well over here. **Graham Donnelly** visited Lae in Papua New Guinea for the ACIAR *Chromolaena* biocontrol project

in mid September. He and **Warea Orapa** travelled to Manus and Los Negros Island where they surveyed Siam weed infestations and released *Pareuchaetes pseudoinsulata* (Arctiidae).

Bill Palmer welcomed the arrival of the first insect being introduced for the biocontrol of mother-of-millions, *Osphilia tenuipes* from Madagascar. It was hand-carried by **Arne Witt**, the Senior Researcher at the South African Field Station where exploration for biocontrol agents of prickly acacia, mother-of-millions and giant rats tail grass is undertaken. Arne remained in Queensland for a month acquainting himself with the weed situation here. After delivering a paper at the Queensland Weeds Symposium on his Madagascan surveys, Arne, with Bill and **Wilmot Senaratne** headed west to see mother-of-millions and address field days in Goondiwindi and Miles before continuing to Winton and Muttaburra to see prickly acacia. Arne, a strict vegetarian, was less than impressed at seeing our national animal splattered beside the road at about 1 kilometre intervals for much of the trip, and also found it a little offputting that the beer was stored next to a side of beef in a cooler on one property we visited. Despite such travails the trip was highly successful with Arne gaining a good appeciation and the landholders an understanding of the overseas part of a biocontrol project. The insect continues to do well in quarantine.

Army Malaria Institute

Bob Cooper spent six weeks during July to mid August in Vietnam, working on a collaborative effort with the Vietnamese military aimed at reducing the incidence of malaria in Vietnamese soldiers. **Steve Frances, Bruce Russell** and **Sarah Russell** all attended the 8th Arbovirus Research and 4th Mosquito Control Association of Australia meeting at Couran Cove, South Stradbroke Island in early July.

Sarah Russell left the institute in August to take up an entomologist position at AQIS in Brisbane. We wish her the best and look forward to seeing her when our laboratories are routinely inspected by AQIS.

Corozon Vidad, from the Ministry of Health in Manilla, spent some time in our laboratory in April and May conducting studies for her Masters dissertation at the University of Queensland. **Dr Tom Burkot** visited in June after he and his family were evacuated to Brisbane from a tense situation in Honiara, Solomon Islands. **Dr Adeline Chan**, from CDC Atlanta, USA, visited in early July to discuss testing of a new dipstick ELISA for detection of malaria sporozoite proteins in mosquitoes.

Heather PROCTOR
Regional Councillor

Museum Menagerie Madness
Build a Bug

For the January 2001 school holidays, the Queensland Museum is presenting a family exhibition to be known as Museum Menagerie Madness. It will be a mixture of strange and curious items form the Museum's collections, living animal displays and a large activity area for children. Insects, spiders and their relatives will be featured and we will reuse many of the ideas that were in the 1992 exhibition Living with Insects; Friends and Foes. This exhibition, supported by the Australian Entomological Society and all major Queensland entomological institutions, was a major success and attracted over 5,000 visitors per day.

Part of Museum Menagerie Madness will be the entries for our 'Build a Bug Competition'. The entries must be loosely based on a real insect, spider or other invertebrate but they can be made of anything and be any size. There are 5 categories for students and one each for adults and robotics.

More than 70 teachers have responded to an offer of an insect education pack for use in the class room. Assuming that each teacher has about 30 students, the number of entries should be over 2000. We made a very rash promise that all child entrants will win a prize and have been actively seeking suitable items. It was with delighted and relief that we accepted an offer from Alice Wells, ABRS, of 2,000 copies of ABRS's magnificent Mites in the Rainforest poster. It was hard to imagine a more suitable prize as the poster is attractive, has bizarre looking animals and promotes biodiversity.

Sybil MONTIETH

Tony Wright of CSIRO Long Pocket took the picture on page 25 at the local Koala Sanctuary. The giant thrips, *Idolothrips spectrum*, lives on dead *Eucalyptus* leaves where it feeds on spores. Was the perspex cover of the Rainbow Lorikeet notice opaque to UV light? Did the thrips in the aggregation Tony pictures think they were safely in the dark?

LAM

SOUTH AUSTRALIA

Adelaide University

Kerrie Davies spent a week with **Robin Giblin-Davis** at the University of Florida, Fort Lauderdale, working on *Fergusobia* nematodes.

The Centre for Evolutionary Biology and Biodiversity, which is a joint initiative of Adelaide University, the SA Museum, and the Plant Biodiversity Centre, Department of Environment and Heritage, is to be launched in October by Prof **John Maynard Smith** of Sussex University. **Andy Austin** is the inaugural

Director of the Centre.
John Jennings will be spending some time at the end of the year at the Natural History Museum and Oxford, examining aulacid wasps (parasites of wood-boring beetles and wasps).

SARDI
Dennis Hopkins and others are busy dealing with what is probably the largest recorded plague of the Australian plague locust.

John JENNINGS
Regional Councillor

VICTORIA

Sunraysia Horticultural Centre, Irymple
LeAnn Beanland is working on identifying the insect vector of Australian Grapevine Yellows, a phytoplasma caused disease of grapevines. Her lab is gearing up for the 2000/2001 field season and once there is symptom expression of AGY in the field, we can begin transmission studies. They will be collecting and identifying candidate vectors to assess their distribution and abundance. A subsample of collected insects will be tested, via PCR, for the presence of the AGY phytoplasma.
On 7 October, LeAnn will be visiting the lab of **Dr. Karen Gibb** (Northern Territory University) and collaborating with the scientists there on a transmission trial. They will be performing transmission experiments using strawberry lethal disease-infected strawberry plants they have collected from cooperating growers.

IPM Technologies
IPM Technologies P/L is very busy with a range of research and monitoring work, and with some rearing of biological control agents as well. **Paul Horne** and **Cindy Edward** have been working with many vegetable growers to increase the use of IPM, and the results have been good. In addition to this, they have taken on more glasshouse crops, which has meant no "easy" time over winter. They are about to start IPM work with wine grape and table grape producers with different insect pests to keep them occupied. At the meeting of Australasian Biological Control in August, they caught up with **Robin Coy**, **James Altmann**, **Dan Papacek**, **John Thomson**, **Richard Llewellyn** and **Andy Ryland**.

Institute for Sustainable Irrigated Agric., Tatura
Alex Il'ichev was invited to USA in July-August 2000 to lecture on Area-wide Mating Disruption achievements in Northern Victoria. He also studied the new techniques of mating disruption application in orchards and discussed future collaboration with the Center for Integrated Plant Systems in Michigan. He visited the University of California, Berkeley, **Stephen C. Welter**; Washington State University, Wenatchee, **Jay F. Brunner**; Michigan State University, East Lansing, **Mark Whalon** and **Lurry Gut.** Alex also visited Orchards in California and Washington involved in the huge interstate project: "Area-wide Management of the Codling Moth: Implementation of a Comprehensive IPM Program for Pome Fruit Crops in the Western US". After his USA trip Alex Il'ichev presented 3 posters at the International Congress of Entomology in Brazil. **Mofakhar Hossain** and **Cathy Mansfield** have been busy finalising their experimental details to continue the work on "Attract and Kill" strategy for effective control of *Carpophilus* beetle. Although the pheromone is the main focus of the control strategy for *Carpophilus*, the team is also very interested to find out more effective and user-friendly co-attractant for *Carpophilus* beetles.

Genetics Department, University of Melbourne.
John McKenzie (Dean of Science) and **David Heckel**, both of the CESAR group in the department, were invited speakers at the recent International Entomology Congress in Brazil. While enjoying the congress, they noted that some of the talk facilities left something to be desired. However they both avoided being robbed at gunpoint on the buses between venues - others were not so lucky (and one congress delegate was bitten by a snake)! **Melanie Norgate** has recently begun a Ph.D., also with the CESAR group, on copper resistance in Lucilia. Melanie gained her Honours degree at Massey University in New Zealand.

Institute for Horticultural Development, Knoxfield
Felicity Wardlaw from DPIWE, Devonport came to IHD in July, to visit the diamondback moth workers. **Peter Ridland** and **Nancy Endersby** attended the second Australian diamondback moth modelling workshop which was held at the University of Queensland, St Lucia, on 8th August 2000. **Bob Sutherst** and **Beth Russell** of CSIRO Entomology facilitated the workshop of 6 participants and DYMEX modelling expertise was provided by **Gunter Maywald** (CSIRO/CTPM). Participants worked with and built on a DBM DYMEX model previously developed by **Mark Stanaway** and **Bronwyn Houlding** in cooperation with the CRC for Tropical Pest Management and the Queensland Horticulture Institute (Stanaway and Houlding 1998). Aspects of crop lifecycle, DBM development and key mortality factors were explored. A list of available data for

incorporation into the model was drafted and some gaps in the knowledge were identified.
Peter Ridland, Nancy Endersby, **Anita Chennell** and **Emily Tee** visited Gatton in August to attend the planning meeting for the new project 'Implementing pest management of diamondback moth' which has been funded by the Horticultural Research and Development Corporation through the Ausveg levy. **Greg Baker** of SARDI will lead the project.
Peter Ridland and **Nancy Endersby** made another visit to Indonesia in September with **Wendy Morgan** to participate in the vegetable project component of the Victorian Government's Assistance Program for Indonesia. They had discussions with **Elske van de Fliert** and **Warsito** (CIP Bogor) and visited **Aunu Rauf**'s laboratory where they met **Djoko Prijono**, **Dami Buchori** and others from IPB (Agriculture University) Bogor to continue planing a collaborative project on pea leaf miner, *Liriomyza huidobrensis*. They then travelled to Lembang Research Institute for Vegetables (RIV) in West Java and Batu (cabbage and apple town) in East Java to deliver IPM workshops for *Brassica* growers in conjunction with **Dr Sudarwohadi** from RIV and the Indonesian Horticulture Foundation (YHI). They left Batu and flew from Surabaya to Makassar in South Sulawesi where the houses are on stilts and the becak drivers drive a hard bargain. Here they were fortunate to meet with **Dr La Daha** (Universitas Hasanuddin) and **Professor Dan Sembel** (Sam Ratulangi University, Manado) and to travel into the hills at Malino to see *L. huidobrensis* in action on potatoes and shallots. The trip ended in Bali where they met with **Dr Supartha** (Udayana University), another *Liriomyza* researcher. Again, *L. huidobrensis* was widespread in vegetables and chrysanthemums around Bedugul.

Keith Turnbull Research Institute, Frankston
Tom Morley has completed the Paterson's Curse Management Handbook with agronomist **Peter Stapleton**. This is the third handbook in a series on noxious weeds. Tom is again working on weed biocontrol, being involved in both the Paterson's curse and ragwort projects.
Robin Adair has been seconded to the Plant Protection Research Institute in South Africa where he is proceeding with aspects of the biological program of Australian acacias and working on initial stages of programs for biocontrol of *Polygala myrtifolia* and *Dipogon lignosus*, two South African species that have become serious environmental weeds in southern Australia. Robin has explored the highly diverse cecidomyiid gall midge fauna on acacias in Australia and is currently testing various species for use on *Acacia mearnsii*.
Patrick Pigott has been appointed Program Leader, Weeds of Natural Ecosystems, replacing **Robin Adair**. Patrick was previously with CALM in Perth.
Aline Bruzzese continues to mass-rear the boneseed leafroller moth (*Tortrix* sp.) for release against boneseed in several Australian states. Aline and **Michael Lindeman** continue to process bitou bush bud and fruit samples from the NSW coast as part of the assessment of the impact of the bitou seed fly, *Mesoclanis polana*, a seed feeding tephritid, released in 1996 and now found throughout the range of bitou bush in New South Wales.
Greg Lefoe has been busy with the elm leaf beetle project and is managing a new project on European Wasps funded by Grape and Wine RDC.
Jean-Louis Sagliocco, formerly of the CSIRO European Laboratory at Montpellier, has taken up the position of Quarantine Manager at the Institute. Jean-Louis is also involved in a feasibility study on the biological control of willows which have been listed as a Weed of National Significance. **Nigel Ainsworth** continues his research on the integration of herbicides with insect biocontrol agents. His studies with horehound and the horehound plume moth are showing encouraging results of the synergistic effects of insect defoliation and herbicide damage.
Franz Mahr's exclusion experiments using acaricides have demonstrated that the St John's wort mite is having a major impact at a long-term monitoring site near Castlemaine. Over 100 releases of the dock clearwing moth were made in Victoria in the three years to March 1999. **Ian Faithfull** reports that the insect has established at some sites, is reducing the density of the weed and is dispersing.
The quarterly KTRI newsletter, Under Control - Pest Plant and Animal Research News is now available by e-mail as a PDF file. People interested should contact: ian.faithfull@nre.vic.gov.au.

Museum Victoria
Ross Field, Ken Walker, Alan Yen, Richard Marchant, Catriona McPhee and **Peter Lillywhite** have now all moved from Abbotsford to the new Melbourne Museum site at Carlton Gardens. All the entomology and other invertebrate collections are now housed at Melbourne Museum along with most of the rest of the natural history collections. The unpacking is on hold as the Museum prepares for its public opening on 21 October. The switchboard number for the Museum is (03) 8341 7777.

Cathy MANSFIELD
Ross FIELD
Regional Councillors

Entomological Society of Victoria

At the August meeting indefatigable newsletter editor Daniel Dobrosak spoke about his studies of acacia flower-feeding paropsid beetles. From extensive field observations and larvae raising studies he has found species which may ultimately be declared new, he has data on larval phenology and association with adults, and has good evidence for summer aestivation, as opposed to the bivoltine habit of some other beetles in this family.

The *Victorian Entomologist* usually has a summary of articles of recent interest, often with an agricultural and weed control emphasis, collated by Ian Faithfull. The current issue enters the debate on common names for dragonflies and has a an article on insect conservation, again using the Odonata for illustration. In spite of its name the journal welcomes articles from outside the state and is not limited to contributions from members. It is a good place to publish interesting field observations, particularly if you need a rapid response for later citation elsewhere. Readership includes about 100 professional and amateur entomologists within Australia, most Australian museums, and those overseas in London, Frankfurt and Maryland. The only caveats are that scientific names are not published for nomenclature purposes within the meaning of the *Code*, and the editor reserves the right to have contributions refereed. Be aware that the Thysanoptera have featured (twice!) and what greater imprimatur can there be?

Ian ENDERSBY

WESTERN AUSTRALIA

Agriculture Western Australia/CLIMA

Debbie Thackray gave a talk on her aphid and virus modelling work at the CLIMA symposium in August - "Ensuring continued research achievement". After operating for seven years as a Commonwealth funded Co-operative Research Centre (CRC), CLIMA (Centre for Legumes in Mediterranean Agriculture - http://www.clima.uwa.edu.au), with continued support from the original partners The University of Western Australia, CSIRO, AGWEST and Murdoch University, has this year changed to a University Centre within UWA. Debbie had brief discussions on insect forecasting systems with Jonathan Knight (Imperial College, UK) whilst he was visiting AGWEST in September.

Françoise Berlandier attended the National diamondback moth (DBM), *Plutella xylostella*, workshop at Gatton, QLD, in August prior to attending the International Congress of Entomology (ICE) in Brazil.

Rob Emery attended the Australasian Postharvest Technical Conference in Adelaide in August where I demonstrated our recently released Phoscard(R) Farm Fumigation Indicator Card that has generated considerable national and international interest as it will allow farmers to monitor their grain fumigation without the need of expensive, sensitive detection equipment. Rob also attended the Australian Working Party on Grain Protection Meeting during the same week where he presented results of a national grain insect resistance monitoring project. In September, Rob went to the National Plant Pest and Disease Database workshop in Melbourne to discuss a proposal to database collections around Australia and link them via the Internet. In early September, Rob joined in celebrating the databasing of AgWest's 100,000th specimen with champagne and food. Kevin Richards was recalled from retirement to enter details of the specimen and a free Insect Collection Screen Saver released. Check out the website if you would like a copy.

Curtin University of Technology

On his way to the International Congress of Entomology, **Jonathan Majer** attended a 30-year reunion of Zoology students from the University of Bristol. Apart from the pleasure of catching up with old friends, he was rather taken back by the "instant ageing" of people who he had not seen since graduating! After attending the conference in Brazil, both Jonathan and **Maz Majer** visited the Federal University of Vicosa in Minas Gerais to discuss their respective research interests. Whilst there, they were intrigued to unearth fellow countrypersons, **Penny Gullan** and **Peter Cranston** who were on a similar mission.

Brian Heterick has had a busy time of it recently. On 15 August, Brian gave a short talk on Curtin Radio 927 on the importance of ants, and followed this up on the Saturday of that week with a longer talk at the Toodyay Naturalist's Club on the same subject. Brian is also working as a taxonomist in the bark invertebrates project being undertaken by Curtin and Edith Cowan Universities. He has identified nearly 1300 morphospecies of invertebrates taken from the trunks of just four local eucalypt species.

Brian Springett, who is visiting from Massey University, is conducting a multidisciplinary study of a private nature reserve at Mt Marshall, to the north of Perth. Curtin honours student, **Nick Jones** is participating and investigating the impact of grazing by sheep on the litter fauna of the area.

CSIRO Entomology

CSIRO Entomology in Perth has been receiving good

Aggregation of Giant Thrips under perspex at Brisbane Koala Sanctuary (see page 21)

Melbourne Museum is new, but the insect cabinets are old - and heavy

publicity lately. **Kathryn Batchelor** and **Tim Woodburn** appeared both on local Channel 9 News and on ABC's Stateline in August to discuss their use of local schools to distribute biological control agents for bridal creeper. **James Ridsdill-Smith** and **Celia Pavri** later appeared on ABC's Landline to discuss the success of their Timerite® method for control of red-legged earth mites.

After attending the ICE **Owain Edwards** visited the EMBRAPA biological control quarantine facility outside Campinas. In addition to discussing potential future collaborations with local scientists **Luiz Alexandre Nogueira de S** and **Elizabeth de Nardo**, Owain also participated in a teleconference addressing the potential non-target ecological effects of biological control agents presented by **Ernest Delfosse** of USDA-APHIS. Owain also took the opportunity to visit an old friend and colleague **Octavio Henrique de Oliveira Pavan**, who is now the Associate Dean of the Institute of Biology at the University of Campinas (UNICAMP).

After attending the ICE, **Andrew Loch** travelled to several cities near Sao Paulo with other Australian forest entomologists as part of the post-ICE eucalypt tour organised by **Dr Norivaldo dos Anjos** (University of Vicosa) and supported by one of the largest Brazilian eucalypt companies, Votorantim Celulose e Papel. Insect pests were scarcely seen on the impressive eucalypt plantations but leaf-cutting ants were seen after much persuasion from our Brazilian counterparts.

Murdoch University

Modika Perera, an entomologist and Australian Grain Industry (GRDC) Postdoctoral Fellow at the WA State Agricultural Biotechnology Centre represented Murdoch University at the ICE. There was a very good response from entomologists as well as molecular biologists to her poster entitled "Towards Aphid Resistance in Transgenic Lupins". After the congress she visited the University of Wageningen Department of Entomology and her Dutch collaborators, Keygene N.V. Wageningen, to discuss future work.

University of Western Australia

Ian Dadour went to the ICE via South Africa where he worked with **Merv Mansell** at ARC (and the SA Police Service) who is trying to keep his head above water doing forensic entomology in South Africa, where the homicide rate is 20,000/annum.

Owain EDWARDS
Regional Councillor

PAPUA NEW GUINEA

Staffing for Kilakila collections: The national insect collection comprising some quarter million specimens under the care of National Agricultural Research Institute, has been without the services of a taxonomist since 1993. Now the first PNG home grown taxonomist, **Mark Ero** has been appointed as the junior curator of the collection. Mark was recently awarded an Honours degree for his work on the taxonomy of PNG *Amblypelta* under Ray Kumar's supervision. Mark's contact number is: (675) 3210218. The collection sorely needs at least two more taxonomists.

Entomologists for CCRI: **Samson Laup**, Head of Entomology at Cocoa and Coconut Research Institute, Rabaul, flew in to UPNG to interview graduating entomologists, and has offered positions to **Paul Gende** and Miss **Gimana Poigeno**. Paul after initial orientation at Tavilo with Sam & Titus, would Head the CCRI Coconut Entomology operations at Stewart Research Station, Madang. Gimana is expected to develop the microbial entomology programmes of CCRI at Tavilo.

Emergence of new coffee pests in PNG: Report No. 24 (1993) of Coffee Research Institute, Kainantu, highlighted the development of four species of cicada to pest proportions. One of the main contributing factors for the increase in cicada populations was thought to be the use of insecticides against pests other than cicadas. Insecticides are routinely used against ants tending coffee mealybugs and it seems they may be killing the natural enemies of cicadas. Further investigations into the coffee cicada problem are urgently required.

Taro Beetle pests – The ravages of taro beetles, mainly *Papuana* species, have made Taro a scarce commodity in the local markets of PNG. The liberally funded SPC project for over eight years has produced no practical results. PNG entomologists met in Rabaul in late September to take stock of the situation.

Orchid beetle settles down in PNG: *Orchidophilus sterrimus* (Waterhouse) (Coleoptera: Curculionidae), a native of South East Asia, is now established in PNG. Geoff Monteith at Queensland Museum kindly identified the pest and provided valuable information. An honours student, **Mark Kia Flemming**, has commenced work on the pest in the Orchid nurseries of PNG Botanical Gardens at Waigani.

Ray KUMAR
PNG Overseas Correspondent

EMPLOYMENT IN ENTOMOLOGY

University of Adelaide
Department Applied & Molecular Ecology

Applications are invited for the following supplementary research scholarship leading to the degree of Doctor of Philosophy at Adelaide University. This scholarship is provided by the Department of Environment & Heritage (DEH) SA to foster research on the ecology and biodiversity of invertebrates, and is associated with Operation Bounceback, a long-term ecological restoration program based in the Flinders Ranges.

Eligibility: Applicants must be Australian Citizens or Permanent Residents of Australia. Applicants must hold or expect to obtain a first class honours degree in entomology, ecology or a closely related field and are expected to have a good working knowledge of invertebrate biology, a knowledge of statistics and an interest in experimental approaches to research. **N.B.** Applicants for a supplementary scholarship must hold or expect to obtain another major scholarship tenable at the Adelaide University.

Stipend: The scholarship is tenable for up to three years. The stipend of the supplementary scholarship is $5000 p.a. and is addition to that for an APA or University scholarship. There is also a sum of $5,000 towards maintenance of the project.

Further Enquiries: Please contact Associate Prof. Andrew Austin, (08) 8303 7265, Fax (08) 8379 4095 or email andrew.austin@adelaide.edu.au. Information about the Department of Applied & Molecular Ecology can be found at www.waite.adelaide.edu.au/AME/

Application forms are available from the Student Centre, Level 4, WillsBuilding, Adelaide University, 5005 Tel (08) 8303 5208, Fax (08) 8303 4401, email sio@adelaide.edu.au or at www.adelaide.edu.au/GSSO

Closing date: 'Bounceback' Supplementary Scholarship, 30 November 2000; APA/University Scholarship, 31st October 2000. Applications are to be forwarded to the Student Centre, Level 4, Wills Building, Adelaide University, 5005.

POSTGRADUATE ENTOMOLOGY PROJECTS:

Australian Survey 2000: Part II

This is part II of the third (1999-2000) biennial survey of postgraduate and honours projects in Australian Entomology (see 1996 and 1998). Part I in the previous issue of *Myrmecia* listed 104 projects. There are 76 contributions in this list, totalling 180 reported PhD, Masters and Honours projects in entomology (and some on other arthropods) in 1999/2000. By comparison there were 258 contributions in 1998 and 223 in 1996. Thanks to the folks who collected project information and e-mailed it to me (their names are in brackets before the entries).

Tish SILBERBAUER

NEW SOUTH WALES

Macquarie University
School of Biological Sciences

(Andrew Beattie, Melinda Hillery & Mark Dangerfield)

CLAXTON, Sandra (PhD) Taxonomy and distribution of Australian terrestrial Tardigrada.

HARRIS, Rebecca (MSc – submitted). The impact of grazing and burning on forest spider assemblages.

HILLERY, Melinda (PhD). Using scale to investigate arid zone termite species diversity and ecology.

KIRSTEN, Alexandra (Hons). Effects of microhabitat and calcium manipulations on the spatial arrangement of slaters in a eucalyptus forest

SMITH, Peter (PhD). Habitat islands in real landscapes, the role of the matrix in dispersal.

STONE, Steven (Hons). Intra-patch invertebrate complementarity as a potential measure of bushland remnant health

WILSON, Peter (MSc). The effect of fragmentation of species interactions.

ZUNUN, Gulistan (MSc). Patterns of invertebrate assemblage turnover across man-made habitat edges.

University of Newcastle
School of Science and Technology

(Sian Towell)

TOWELL, Sian (Hons). The instream ecology of the tributary creeks entering the Tuggerah Lakes estuary.

University of Sydney
School of Biological Sciences

(Fiona Christie & Cindy An)

AN, Cindy (PhD). Clock gene(s) in fruit fly.

CHRISTIE, Fiona (PhD). The effects of urban fragmentation on ecological processes and the stability of woodland remnants in a fragmented land system.

GIBB, Heloise (PhD). Competition and community structure of ants on the Hawkesbury sandstone.

GILES, Sue (Masters) The role of small mammals in regulating trophic relationships in leaf litter assemblages.

LASSAU, Scott (PhD). The influence of vegetation and habitat characteristics on arthropod biodiversity and composition.

REID, Adele (PhD). Effect of grazing and nutrient inputs on the grassland arthropod diversity and the implications for sustainability.

University of Western Sydney
Hawkesbury (Richmond) Campus
(Robert Spooner-Hart)
BANU, Swapna (PhD). Behaviour of greenhouse thrips, *Heliothrips haemorrhoidalis* (Thysanoptera: Thripidae) in resopnse to spray oils.
BINLIN, Tan (PhD). Petroleum spray oil phytotoxicity in navel orange, *Citrus sinensis*.
CANNARD, Mary (Hons). Evaluation of two entomopathogenic fungi, *Metarhizium anisopliae* and *Beauveria bassiana*, against citrus mealy bug, *Planococcus citri* (Homoptera:Pseudococcidae).
HOSSAIN, Mukhter (PhD). Potential of two entomopathogenic fungi, *Metarhizium anisopliae* and *Beauveria bassiana*, for control of the azalea lace bug *Stephanitis pyrioides* (Hemiptera: Tingidae).
JAMES, Tanya (Hons). Behavioural effects of petroleum spray oils on southern red mite, *Oligonychus ilicis*, (Acarina: Tetranychidae).
KHAN, Inamullah (PhD). Aspects of the biology and ecology of the Australian ladybird *Stethorus vagans* (Coleoptera:Coccinellidae).
LIANG, Weiguang (PhD). Impact of petroleum spray oils on the community ecology of selected citrus pests and their natural enemies.
NICHOLAS, Adrian (PhD). The woolly apple aphid, *Eriosoma lanigerum* (Homoptera:Aphididae): its pest status and management in IPM programmes.
VAN LIEM, Nguyen (PhD). Biology and ecology of the lemon bud moth *Prays* sp (Lepidoptera: Yponomeutidae) in central coastal NSW.
WESONGA, John (MSc). Use of entomopathogens and spray oils in integrated control of diamondback moth, *Plutella xylostella* (Lepidoptera: Plutellidae).

AUSTRALIAN CAPITAL TERRITORY
Australian National University
Division of Botany and Zoology
(David Duncan & Penny Gullan)
(* co-supervision, CSIRO Entomology)
COOK, Lyn (PhD). The karyology and systematics of the gall-inducing genus *Apiomorpha* (Hemiptera: Coccoidea: Eriococcidae).
DIMITRIADIS, Sophia (PhD). The palaeoecology of Australian aquatic insects and other invertebrates - towards an understanding of the past and future.
*DUNCAN, David (PhD). Habitat fragmentation and pollination ecology of plant species in NSW Mallee.
REICHEL, Hanna (PhD). Systematics and biogeography of the ant genus *Rhytidoponera* (Hymenoptera: Formicidae).
SU, You-Ning (Masters). The systematics of nemobiine crickets (Orthoptera: Gryllidae), with a revision of the Australian genus *Bobilla*.
*THOMSON, Vivien (Hons). Impacts of herbivory on patterns of reproductive allocation in a monoecious cucurbit.

QUEENSLAND
University of Queensland
Department of Microbiology and Parasitology
(Tessa Knox)
(* co-supervision, Queensland Institute of Medical Research)
*KNOX, Tessa (Hons). Understanding vector competence of *Aedes aegypti* for dengue 1 - 4 as a prerequisite to better control in north Queensland.

Queensland Institute of Medical Research
Mosquito Control Laboratory
(Leon Hugo)
(*co-supervision, UQ Department of Tropical Health and Nutrition)
HUGO, Leon (PhD). Age structure and behaviour of Australian vectors, with particular reference to saltmarsh mosquitoes.
*HURST, Tim (PhD). Evaluation of Australian larvivorous freshwater fish species for use in integrated mosquito control programs.

Griffith University
Australian School of Environmental Studies
(Heather Proctor)
POWER, Narelle (PhD). Interactions of native Tephritinae (Diptera: Tephritidae) with *Senecio* spp. Griffith University – gold coast campus.

School of Environment and Applied Sciences
(Eric Chitra)
CHITRA, Eric (PhD). Bionomics of *Culicoides molestus* (Diptera, Ceratopogonidae): a pest species on the Gold Coast.

James Cook University
School of Tropical Environment Studies and Geography
(Simon Grove)
GROVE, Simon (PhD). Saproxylic insects and sustainable rainforest management.

Department of Zoology and Tropical Ecology
(Agnes Rortais)
RORTAIS, Agnes (PhD). Role of the abiotic factors on the population structure of the flightless dung beetles *A. pectoralis* and *T. involucre* at a natural edge of the margin of their habitat.

SOUTH AUSTRALIA
Flinders University
(Katja Hogendoorn)
FLAVEL, Tam (Hons 1999). Task allocation and division of labour in *Exoneura robusta*.
HURST, Pam (PhD). Life cycle and sociality of the allodapine bee *Exoneurella tridentata*, a eusocial species with small colony sizes.
JOYCE, Narelle (Hons). Life cycle of *Brevineura elongata* and two other Queensland *Brevineura* species.
KRANZ Brenda (PhD, conferred 2000). Social biology of Australian gall inducing thrips on *Acacia*.
LEYS, Remko (PhD, conferred 2000). Phylogeny, biogeography and mating behaviour of carpenter bees.
MORRIS, David (PhD, conferred 2000). Phylogeny of Australian *Acacia* thrips.
STEEN, Zeta (PhD). Behaviour and ecology of the native Australian carpenter bee, subgenus *Lestis*.
WILLS, Taryn (Hons). Reproductive skew in gall forming thrips in relation to gall size and number of soldiers.
ZAMMIT, John (PhD). Ant predation is a major factor promoting social behaviour in allodapine bees

VICTORIA
Monash University
Department of Biological Sciences
(Fiona Clissold)
ABBOTT, Kirsti (PhD). Alien ant invasion on Christmas Island, Indian Ocean: the role of ant-scale associations in supercolony dynamics of the yellow crazy ant, *Anoplolepis gracilipes*.
ROWLES, Alexei (PhD). Invasion dynamics of the alien Argentine ant (*Linepithema humile*) on the urban-bushland interface in Melbourne.

La Trobe University
Department of Zoology and Centre for Environmental Stress and Adaptation Research (CESAR)
(Tim New)
ADAMTHWAITE, Stephen (Hons). Aquatic insect zonation.
GREY, Merilyn (PhD). Avian diversity and insect induced die-back in remnant eucalypt woodlands.
MAHON, Elanor (PhD). Spider diversity in box iron bark country.
MANSFIELD, Catherine (Masters) Host finding and population dynamics of *Phthorimaea operculella*.
NEVILLE, Peter (PhD). The effects of fire on ground-dwelling arthropods of the Dandenong Ranges NP, Victoria, with particular reference to ants.
NUKMAL, Nismah (PhD). Psyllid ecology.
SRI KENTJONOWATI, Endang (PhD) Systematics and biogeography of Indonesian psocoptera.
SPARKS, Kate (Hons). Biology of bees.
SUBCHAN, Wachju (PhD). Effect of some ecological aspects on the life cycle of *Cardiaspina albitextura* (Homoptera: Psyllidae).
WARD, Darren (Masters). The use of rapid sampling techniques to assess terrestrial invertebrate assemblages.
WHITE, Andrea (Hons). The effects of several pesticide treatments on morphological and fitness characters in *Chironomus tepperi*. (CESAR)

University of Melbourne
Department of Zoology
(Melanie Archer, Matt Bruce, Liz Dalgleish, Anne Gaskett, Deborah Glencross & Cybele Heddle)
ARCHER, Melanie (PhD). Victorian carrion insect succession and its application to forensic entomology.
BRUCE, Matthew J. (Hons). Two possible functions for web decorations in an orb-weaving spider, *Argiope keyserlingi*.
DALGLEISH, Elizabeth (PhD) Biparental care in the rainforest dung beetle, *Cephalodesmius armiger*.
GASKETT, Anne C. (Hons). The role of pheromones in the mating strategies of the orb-web spider *Argiope keyserlingi* (Araneae, Araneidae).
GLENCROSS, Deborah (Hons). Measures of insect abundance in regards to the territory quality of the Madagascar Paradise Flycatcher, *Terpsiphone mutata*.
HEDDLE, Cybele (PhD). The adaptive significance of polygyny in Australian ants.

WESTERN AUSTRALIA
Curtin University Of Technology
School of Environmental Biology
(Jonathan Majer & Karl Brennan)
(* co-supervision by Environmental Department, Alcoa World Alumina)
BISEVAC, Lubomir (PhD). Evaluation of invertebrates for the derivation of completion criteria in minesite rehabilitation.
*BRENNAN, Karl E.C. (PhD). The response of spider communities to the multiple disturbances of burning and/or mining in a Western Australian Jarrah forest.
JONES, Nicholas (Hons). Comparative study of ant communities of rehabilitated mineral sands mines in Capel, Western Australia.
MAY Jelena (Hons). Impact of removal of exotic tree species as epigaeic invertebrates on Kings Park.
MOIR, Melinda (PhD). Hemiptera communities of understorey habitats in rehabilitated bauxite mines and Jarrah forest.

RADHO TOLY, Siprianus (Masters). The impact of insect herbivores on the growth and abundance of the locally native jarrah and tuart and the introduced southern mahogany and sugar gum in the Kings Park Bushland.
VOLSCHENK, Erich (PhD). Systematics and biogeography of *Lychas* scorpions in Australia.
WILLIAMS, Louise (PhD). Disinfestation of Mediterranean fruit fly in citrus.

University of Western Australia
Department of Zoology
(Dean Baker & Dean Paini)
(* co-supervision, CSIRO Entomology)
*BAKER, Dean (PhD). The genetics of host use in a parasitoid wasp, *Diaeretiella rapae* (Braconidae)
PAINI, Dean (PhD). The impact of the European honey bee on native bees.

AES New Members

We welcome the following new members who were elected at an Executive Meeting on 4th October 2000:
Jason Cummings, PhD student, University of New England, Armidale, NSW.
Rod Eastwood, Honours student, Griffith University, Queensland. Interests: biology, mutualisms and phylogeography of Lycaenidae.
Jong Kyun Park, Professor, Dept of Sericulture and Entomology Resources, Sangju National University, Sangju, 742-711, Korea. Interest: Taxonomy of Coleoptera: Harpalidae
Leigh Pilkington, PhD student, University of Sydney, Orange, NSW.
Luke Rapley, , PhD student, Hobart, Tasmania.
Sarah Russell, AQIS Entomologist, Mitchelton QLD.
Solomon Balagawi, National Agriculture Research Institute (NARI), Bubia Research Centre, Lae, PNG
Amanda Mararuai, PNG Fruit Fly project, LAES Kerevat, Kokopo, East New Britain Province, PNG
David Putucan, NARI – Laloki Research Station, Port Moresby, PNG
Simphorian Adur Sar, NARI HQ, Lae, Morobe Province, PNG
These four PNG entomologists all work on the ACIAR/ AusAid funded fruit fly project.
Mark Short, , PhD student, CSIRO Entomology, Canberra. Mark's main research interest is in the taxonomy of Australia's pa rasitic wasps and how these wasps might be used in biological control. He has recently commenced a PhD on the taxonomy and biology of hymenopteran parasitoids of the autumn gum moth, a serious forestry pest. The various resources for his project are being supplied by the Australian National University, CSIRO Entomology and the CRC for Sustainable Production Forestry.

A.E.S. PHIL CARNE PRIZE

This prize is open to any undergraduate or postgraduate who has submitted a paper to the **Australian Journal of Entomology** and had it accepted for publication within the last year. Manuscripts and other editorial correspondence should be addressed to Dr Peter Allsopp, Chief Editor, Bureau of Sugar Experiment Stations, Private Bag 4, Bundaberg DC 4670, Australia.

MACKERRAS MEDAL

This is the Australian Entomological Society's award for excellence and can be awarded every two years to a financial member of the Society who is: under 50 years of age, pursuing excellent research, and has outstanding personal qualities. Any financial member, including students, may make a nomination to the Secretary.

NOTICES

The 50th Annual Meeting of the Entomological Society of Canada will be held 3 - 7 December 2000, in Montreal. The meeting will be a landmark one, held jointly with the Entomological Society of America, and La Société d'entomologie du Québec. The three societies are presently focused on the preparations. Please watch the ESA website for information on dates, deadlines and places, and note that abstracts must be submitted via the ESA website (www.entsoc.org).

Management of Diamondback Moth and other Crucifer Pests. 4th International Workshop
26 - 29 November 2001
The fourth international DBM workshop will continue the tradition of the first two workshops held in Taiwan and the third one held in Malayasia, of bringing together scientists and others involved with the *Brassica* industry from around the world. Themes of the workshop will focus on revision of progress made in *Brassica* Integrated Pest Management in the past two decades since the first workshop and will aim to identify the major impediments to its further progress. Emphasis will be placed on innovations in pest management techniques.
http://www.studentadmin.unimelb.edu.au/moth/
Email: fionacam@unimelb.edu.au.

Staphylinid Beetles
dr. Arnaldo Bordoni, Museo Zoologico "La Specola", Via Romana 17, 50125, Firenze, Italy

a.bordoni@dada.it has asked the Society if anyone has specimens of Coleoptera, Staphylinidae, Xantholininae that he could study. He has published numerous papers on Palaearctic species, and for eight years has studied the species of S.E.Asia. Currently he is working on the species of Australia, New Guinea, New Zealand and Pacific Islands, and has received the types and other material from most important museums in Australia.

Volunteer Required

AESOP Business Volunteers has been assigned a project in the Philippines needing the services of a volunteer to set up the methodology/techniques involved in breeding butterflies. Volunteers have their airfares and accommodation paid and are given a weekly allowance for food and incidentals. They are also given a start-up allowance to cover medication etc.

The start up date on this project is any time within the next six months and would be for approximately 8 to 12 weeks. Accommodation is in a small hotel in Cebu City with private bathroom, air conditioning, TV, refrigerator and meals provided. The volunteer would set up the methodology/techniques of breeding and preserving butterflies, and also train five staff. Advice is required in setting up a live display for educational tours, and creating a museum and catalogue of the species that will be bred. See: <www.aesop.org.au> e-mail: robyn.wood@aesop.org.au

Wolbachia Testing

We are currently screening for the incidence of Wolbachia in Australian insects using a new long-PCR screening procedure. Wolbachia is a microorganism responsible for a range of weird and wonderful effects in their hosts, including postmating reproductive isolation, parthenogenesis, feminization and a variety of fitness effects including reduced longevity and fecundity. If you have insects preserved in 100% ethanol, we would love to have them as long as they are identified (preferably to the species level). We'll be glad to send you the results!

Melissa Carew & **Ary Hoffmann**, Centre for Environmental Stress and Adaptation Research, La Trobe University, Bundoora Vic 3083. <A.Hoffmann@latrobe.edu.au>

Thrips, Plants, Tospoviruses: The Millenial Review. 7th International Symposium on Thysanoptera

2-7 July 2001, Reggio Calabria, Italy

<http://www.keele.ac.uk/depts/aep/thrips2001> This symposium will bring together the wide range of people interested in thrips and tospoviruses, their evolution, ecology, interactions, and effects on crop production. Topics to be considered will range from tospovirus molecular structure, host-plant relationships, and epidemiology, to thrips development, ecology, and biological control.

5th Conference on Invertebrate Biodiversity and Conservation

1-4 December 2001, Adelaide University, South Australia. http://www.waite.adelaide.edu.au/bio2001/

Provisional Symposia

1. Rarity & sampling in invertebrate communities; 2. Impact of invasive species; 3. Biodiversity of arid zone & ephemeral waters; 4. Marine invertebrate biodiversity; 5. Molecular tools in invertebrate conservation; 6. Legislation & education

Controlling Pests and Diseases with Spray oils

An essential component of sustainable pest and disease management is effective use and marketing of biorational pesticides. Spray oils are very effective biorational pesticides. The latest spray oil R&D findings, and their application to control a wide range of plant insect pests and diseases, are being published in a new book. The book is the result of extensive editing of the papers presented at the "Spray Oils Beyond 2000" Conference held in Sydney, Australia in October 1999. Available March-April 2001 from University of Western Sydney, Richmond, NSW; $A130 plus postage. Orders are being accepted by fax (0245 701 520), or by email (d.tayler@uws edu.au) Topics covered: Petroleum spray oils: chemistry, history, refining and formulation; Plant and fish oils: chemistry, history, refining and formulation; Phytotoxicity: causes and effects; Uses with herbicides; Modes of action against arthropods and pathogens; Use with entomopathogens and bioherbicides; Practical use in IPDM programs and impact on natural enemies; Environmental and health issues; Laboratory bioassays and spray application; Use with synthetic pesticides.

www.hawkesbury.uws.edu.au/events/sprayoils/

3rd International Canopy Conference

June 2002, Cairns, Australia

The Queensland Government and the Smithsonian Institution are proud to support the 3rd International Canopy Conference to be held in Cairns, north Queensland, Australia. Conference organisers are calling for papers on a wide range of topics.

<http://www.premiers.qld.gov.au/whatsnew.htm>

THE AUSTRALIAN ENTOMOLOGICAL SOCIETY INC.

NOMINATION FOR MEMBERSHIP

Please return to:
Ms Nancy Endersby, AES Secretary, c/o Institute for Horticultural Development,
Private Bag 15, Scoresby Business Centre VIC 3176
E-mail: Nancy.Endersby@nre.vic.gov.au; Tel. (03) 9210 9222; Fax (03) 9800 3521

We, the undersigned

Proposer: .....
.....
(print name here) (signature)

Seconder: .....
.....
(print name here) (signature)

being financial members of the Society, propose the following for membership of the Australian Entomological Society Inc.:

Title..... Initials..... Given name..... Family name.....

of (Address)
.....
....
..... Post code.....

Tel. ..... Fax
.....

E-mail: ..... Degrees, etc.
.....

Occupation or Appointment
.....

Interests, experience and publications in entomology for publication in the News Bulletin *Myrmecia* (please attach brief resumé):
.....

I accept nomination and undertake, if elected, to abide by the rules of the Society and to pay annual subscriptions by the date prescribed.

COUNCILLORS

Australian Capital Territory
Dr Martin Steinbauer
CSIRO Entomology
GPO Box 1700
Canberra, ACT, 2601
Ph (02) 6246 4090
Fax: (02) 6246 4155
Martin.Steinbauer@ento.csiro.au

Terry Bowditch
Grains Res. & Devel. Corp.
PO Box E6
Kingston ACT 2604
Ph 02 6272 5525
Fax 02 6271 6430
t.bowditch@grdc.com.au

New South Wales
Dr Robert Spooner-Hart
School of Horticulture
University of Western Sydney
Richmond NSW 2753
Ph (045) 701 429
Fax (045) 701 314
r.spooner-hart@uws.edu.au

Dr M.J. Fletcher
Orange Agricultural Institute
Forest Road
ORANGE NSW 2800
Ph (02) 63913943
Fax (02) 63913899
murray.fletcher@agric.nsw.gov.au

Dr Robin Gunning
NSW Agriculture
RMB 944
Calala Lane
TAMWORTH nsw 2340
Ph (02) 6763 1128
Fax (02) 6763 1222
rgunning@enternet.com.au

Entomological Society of New South Wales
Dr A.D. Clift
Dept of Crop Sciences
University of Sydney NSW 2006
Ph (02) 9351 2938
Fax (02) 9351 6928
Email: clifta@agric.usyd.edu.au

Northern Territory
Mr Martin Shivas
Medical Entomology Branch
Territory Health Services
PO Box 40596
Casuarina NT 0811
Ph (08) 8922 8548
Fax (08) 8922 8820
martin.shivas@nt.gov.au

Queensland
Ms Kylie L. Anderson
NAQS AQIS
28 Peters Street
Mareeba QLD 4880
Ph (07) 40928405
Fax (07) 40923593
kylie.anderson@aqis.gov.au

Brad Scholz
Farming Systems Institute
Queensland D. P. I.
203 Tor Street (P.O. Box 102)
Toowoomba Qld 4350
Ph (07) 4688 1312
Fax (07) 4688 1199
scholzb@dpi.qld.gov.au

Dr. Heather Proctor
Australian School of Env. Studies
Griffith University
Nathan Qld 4111
ph (07) 3875-3844
fax (07) 3875-7459
H.Proctor@mailbox.gu.edu.au

Ent. Society of Queensland
Dr J. King
QDPI Forestry Service
PO Box 631
Indooroopilly Q 4068
Ph (07) 3877 9716
Fax (07) 3371 2217

South Australia
Dr John Jennings
Dept Appl. & Molecular Ecology
Waite Campus, Uni. Adelaide
Glen Osmond SA 5064
Ph 08 8303 7277
Fax 08 8379 4095
J_JENNINGS@onaustralia.com.au

Tasmania
Dr Geoff R. Allen
School of Agricultural Science,
University of Tasmania,
GPO Box 252-54,
Hobart, TAS 7001
Ph (03) 6226 2732
Fax: (03) 6226 2642
Geoff.Allen@utas.edu.au

Victoria
Dr Ross Field
Museum Victoria
PO Box 666E
Melbourne Vic 3001
Ph (03) 8341 7430
Fax (03) 8341 7430
rfield@museum.vic.gov.au

Ms Catherine Mansfield
Institute for Sustainable Irrigated Agriculture
Private Bag 1
Tatura Vic 3616
Ph (03) 5833 5225
Fax (03) 5833 5229

Entomological Society of Victoria
Mr Ian Endersby (acting)
56 Looker Road
Montmorency VIC 3094
Ph (03) 9435 4781
endersby@mira.net

Western Australia
Dr Owain Edwards
CSIRO Mediterranean Agric Res
Private Bag PO Wembley
Western Australia 6014
Ph 08 9333 6401
Fax 08 9333 6646
o.edwards@ccmar.csiro.au

CONSERVATION COMMITTEE
The Vice President & Secretary are *ex officio* members of the Conservation Committee

Prof Jonathan Majer
School of Environmental Biology
Curtin University of Technology
GPO Box U1987
Perth WA 6845
Ph (08) 9266 7041
Fax (08) 9266 2495
imajerj@info.curtin.edu.au

Dr T. New (Vic)
Ph (03) 9479 2247
Fax (03) 9478 1551
zootn@zoo.latrobe.edu.au

Dr E. G. Matthews (SA)
Ph (08) 8207 7506
Fax (08) 8207 7222
ematt@senet.com.au

Dr A. N. Andersen (NT)
Ph (089) 448431
Fax (089) 448444
Alan.Andersen@terc.csiro.au

Dr R. V. Gunning (NSW)
Ph (02) 67631128
Fax (02) 676322
rgunning@enternet.com.au

Dr D. P. Sands (Qld)
Ph (07) 32142803
Don.Sands@brs.ento.csiro.au

***MYMECIA* EDITOR**
Laurence Mound
CSIRO Entomology
GPO Box 1700
Canberra ACT 2601
Ph (02) 6246 4280
Fax (02) 6246 4264
laurence@ento.csiro.au

ASSISTED BY:
Tish Silberbauer: lsilberb@metz.une.edu.au

IMMEDIATE PAST PRESIDENT
Dr Jim Cullen
CSIRO Entomology
GPO Box 1700
CANBERRA ACT 2601

SOCIETY HONORARY MEMBERS
Dr B.R. Champ
Dr I.F.B. Common
Dr E.N. Marks
Dr K.R. Norris
Dr C.N. Smithers
Dr D.F. Waterhouse

MACKERRAS MEDALLISTS
1984 Dr J.A.L. Watson
1986 Dr R.W. Sutherst
1988 Dr T.R. New
1990 Dr R.A.I. Drew
1992 Dr E.S. Nielsen
1996 Dr M.P. Zalucki
2000 Dr P.G. Allsopp

OVERSEAS CORRESPONDENTS
Ms O.R. Green
40 Preston Ave
Henderson
AUCKLAND 8
NEW ZEALAND

Prof. R. Kumar
Biology Dept, UPNG
Box 320, University P.O.
National Capital District
PAPUA NEW GUINEA
Ray.Kumar@upng.ac.pg
Ph (675)3267630/210
Fax: (675) 3260369/3267187

Dr M.W.L. Crosland
Biology Dept
Chinese Univ. of Hong Kong
SHATIN NT
HONG KONG

Printed by:
GOANNA PRINT
151-155 Gladstone St.
Fyshwick ACT 2609
Fax (02) 6280 7369

Distributed by:
Blackwell Science Asia
54 University St
CARLTON VIC 3053
Ph (03) 9347 0300